MEN AT WORK

# FARMS

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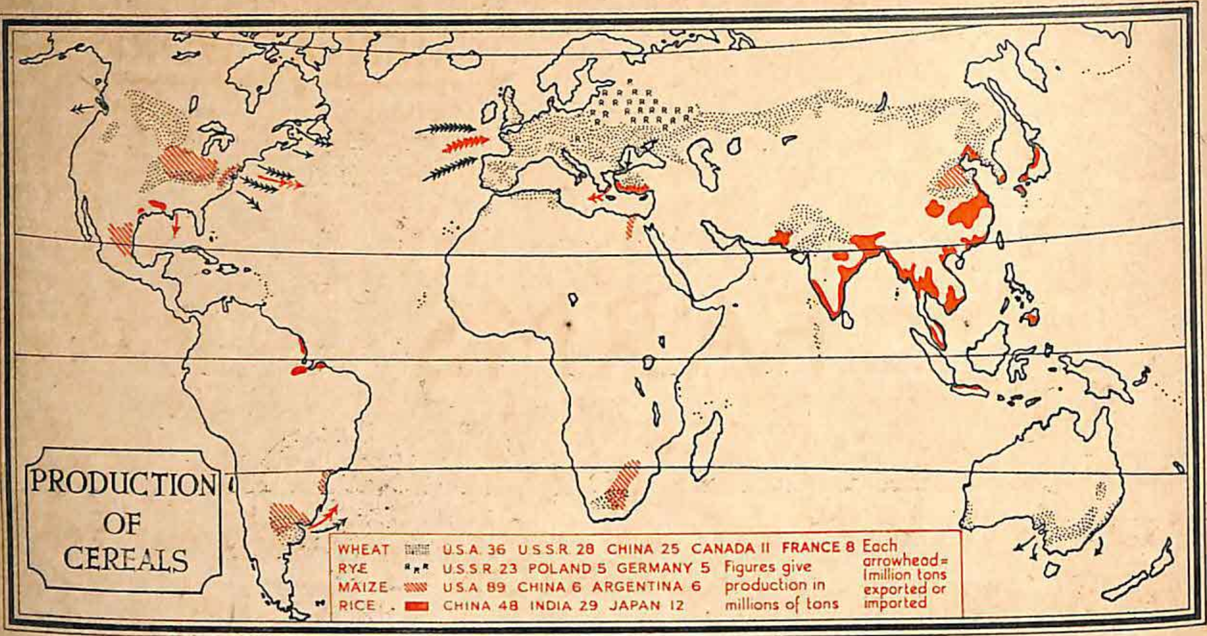
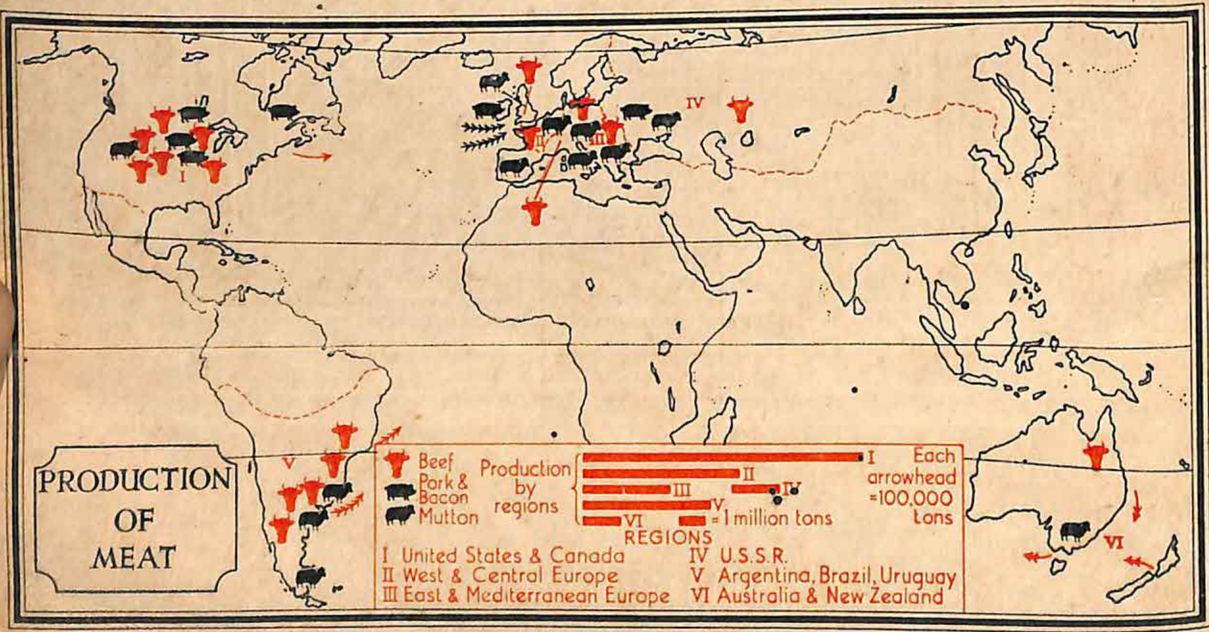


## PRODUCTION OF CEREALS

WHEAT ▨ U.S.A. 36 U.S.S.R. 28 CHINA 25 CANADA 11 FRANCE 8
RYE ᴿᴿᴿ U.S.S.R. 23 POLAND 5 GERMANY 5
MAIZE ▨ U.S.A. 89 CHINA 6 ARGENTINA 6
RICE 🟥 CHINA 48 INDIA 29 JAPAN 12
Figures give production in millions of tons
Each arrowhead = 1 million tons exported or imported



## PRODUCTION OF MEAT

~~670(A)~~

## MEN AT WORK

GENERAL EDITOR: T. Herdman, M.Sc.

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# FARMS

*by*

A. ROBINSON

SENIOR BASIC TRAINING COLLEGE BANIPUR

*Illustrated by*

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*First published 1953*

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*by Jarrold & Sons Ltd., Norwich*

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SENIOR BASIC TRAINING COLLEGE ★ BANIPUR

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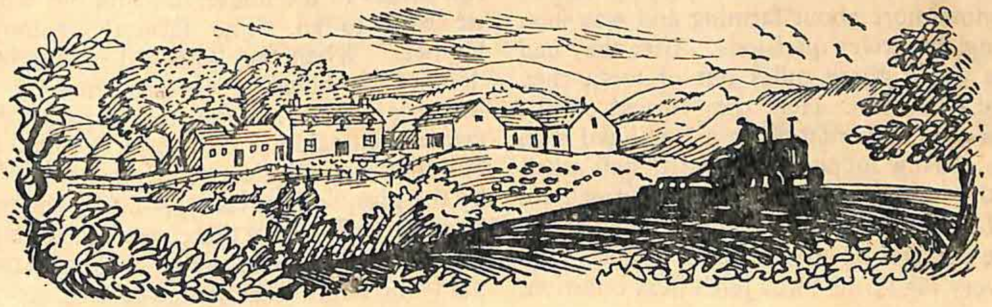

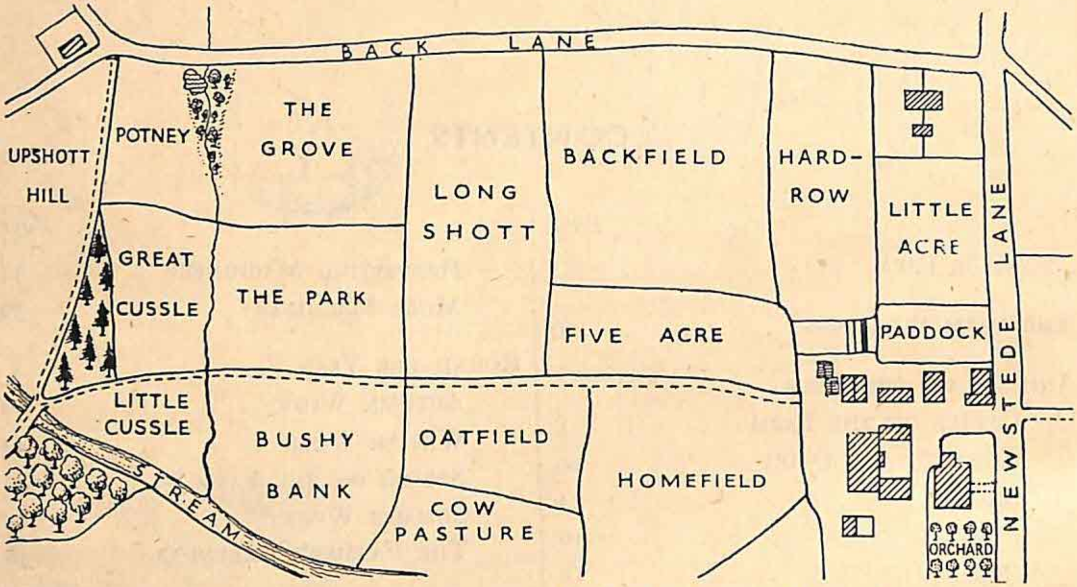

Fig. 1. Map of Newstede Farm. Can you suggest how some of the fields got their names? Try to find interesting field names in your district.

## NEWSTEDE FARM

ONE autumn day a lorry full of boys and girls pulled up at the last traffic lights in the town of Forgeham. It was driven by a girl dressed in a sweater and riding breeches. In the cab beside her was a girl named Joan Prior. She was fourteen. Her cousin, Jeff Prior, was waiting to get on the lorry, but as the back was full he had to jump up in front. When the lights turned to green the lorry moved off towards the country. The party was made up of boys and girls from a Forgeham school who were going potato picking.

Like many other town boys Jeff wanted to know more about farming and was soon asking the driver questions. After they had gone about three miles out of town they came to an inn. Here they turned off the main road and went along a lane lined with trees. "How much farther is it?" Jeff asked the driver. "Just over a mile. You will see the farm on the right-hand side just beyond some cottages on the corner of a lane." "Is it a very big farm?" was Jeff's next question. "I expect you will think it is a big one because it has quite a large farmhouse and a lot of buildings but it has not a very large amount of land, somewhere between 150 and 200 acres. It is quite an average-sized place. I've worked on farms with 500 to 1500 acres. The biggest one had been made by joining together three smaller farms. I have also been on farms as small as 20 acres, but these were little more than small holdings.

"Here we are. When I pull up, you two run across to the house and find out where we have to go. The farmer's name is Homer." When they knocked on the back door of the house it was answered by the farmer's wife. When they told her what they wanted, she said her husband was round the buildings somewhere. "Try round to the left by the pigs," she advised, pointing the way, "and then if he's not there, you can go round behind the barn and across into the stack-yard—he's sure to be somewhere there."

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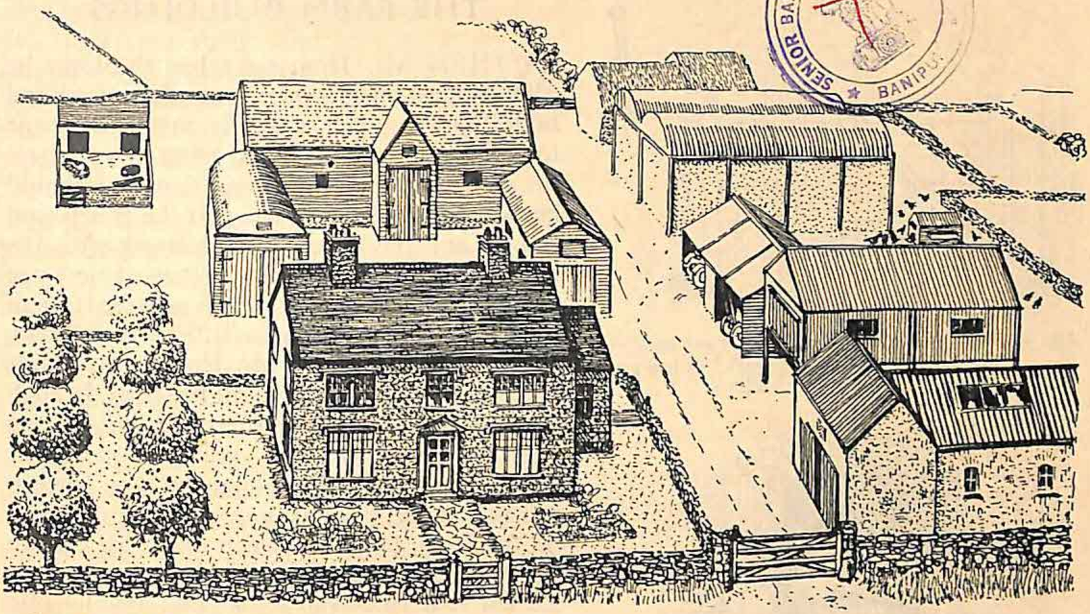


Fig. 2. The farmyard and its buildings. Find each of these buildings on the map. Start at the path to the front door of the farmhouse.

They thanked her and did as they were told. They found the pigs without any trouble but the farmer was not there, so they went over to the open door of the barn. On looking in they saw a man doing something to a machine. They told him they were looking for Mr. Homer. "I couldn't tell you where he is now. I haven't seen him since before breakfast, but he may be with George over in the implement shed in the stackyard. Keep right on to the end here and then turn to your right." As they turned the corner they were startled by the roar of a tractor engine that had just been started. Two men were standing by the tractor. The one in blue overalls was evidently George, and the other, in breeches and gaiters and with a stout ash walking-stick hooked over his arm, must be the farmer. They went up to him and told him who they were. "Right you are, I'll come and have a word with you all before you start. You carry on, George. The rest of us will be down in ten minutes or so."

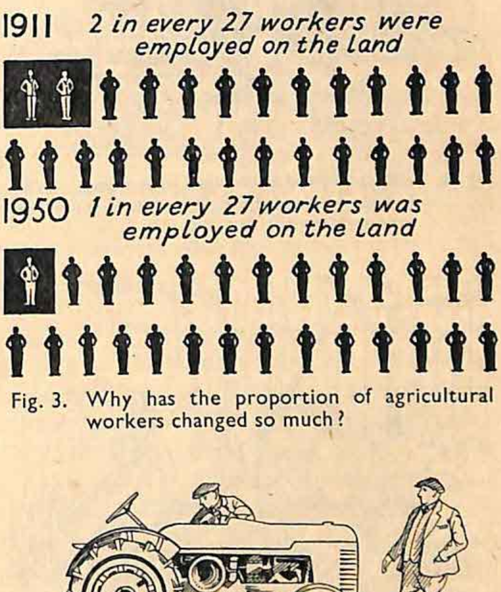


Fig. 3. Why has the proportion of agricultural workers changed so much?

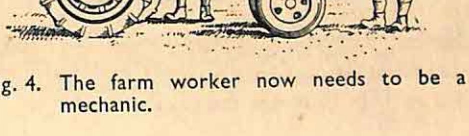


Fig. 4. The farm worker now needs to be a mechanic.

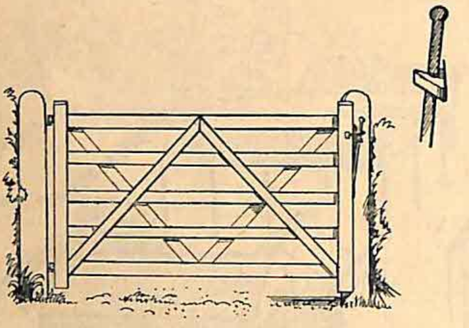


Fig. 5. Field gates should fasten easily and securely. How does this fastener work? Is it a good type?

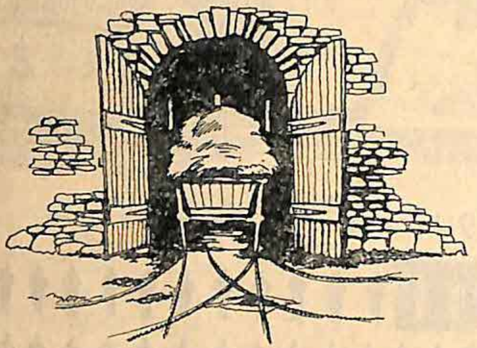


Fig. 6. Old-fashioned barns had high doors. Why is this kind of barn less often found on modern farms?

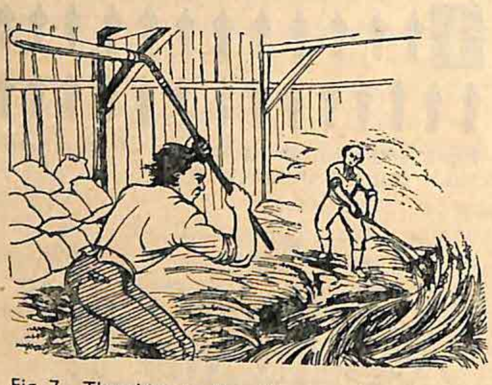


Fig. 7. Threshing in the olden days. The sheaves of corn were opened and spread on the wooden floor of the barn and beaten with *flails* to loosen the grain.

## THE FARM BUILDINGS

WHEN Mr. Homer reached the lorry he banged on its mudguard with his stick and said: "Now you lads and girls, just listen to me for a few minutes. If you're going to work here for some days, it's only fair that you should know a bit about the place and the things you can do and the things you must not do. It's like playing football or any other game—you must know the size of the pitch and the rules of the game. That's right, isn't it?" There was a chorus of "Yes, sir", so Mr. Homer continued.

"You have just come in off the road through that gateway. The gate there was open when you drove up to it, but sometimes it will be shut. What you must remember is to leave it just as you find it. That goes for any other gate on the farm, too, unless you know for certain that it ought to be fastened.

"On your right you see a long, new-looking building—that's the cowshed. On the left is my house. In front of us you can see buildings arranged round the three sides of a square. The high building at the back of the square is the barn. You'll notice it has doors big enough and high enough for a loaded cart to draw in. Some corn is still stacked there. In the old days it used to be threshed there by men using flails. On the left-hand side of the square are loose boxes for young stock or sick cows, and a covered yard where fattening bullocks are kept in winter. On the right-hand side nearest to us, is the stable for the horses and some old cowsheds. One part of them is now used as a bull pen and the rest for more loose boxes and storage places.

"To the right is the stackyard. That's where I'm taking you now. This first place is the granary. The openings underneath are used for housing the tractors, carts and trailers; one opening has been fitted up as a workshop. This long, open-fronted shed is the implement store and a little farther on we have the Dutch barns. The bays at this end are filled with unthreshed corn, but the one at the far end is full of baled straw and some loose straw. This is where you can leave your things and have your dinner. Has anybody got a match?"

Only Jeff had any matches and so he offered them to the farmer thinking that he was going to have a smoke. "Thank you very much" said Mr. Homer, putting the box in his pocket. "Ask me for them back before you go home and please remember, all of you, not to bring matches whilst you are here. The country doesn't want to lose several tons of good grain and I don't want to claim on my fire insurance. Well, I think that's all I've got to say, except that you can play about with the straw here and make a noise if you want to—I've been young myself—but keep off the stacks and don't interfere with the animals or frighten them."

The party left their belongings in various corners and then followed Mr. Homer to the field where the potatoes were being lifted. George had already lifted two rows and started on a third. Mr. Homer told them to divide into pairs and gave each pair a large basket. Next, he cut sticks from the hedge and marked off the lines of potatoes so that each pair had an equal amount to pick up. When they had filled their baskets they emptied them into sacks that had been placed ready.

Both Joan and Jeff were very interested in the potato lifter. Being at the end of the line they were able to see how it worked. It had a broad blade in front. As the tractor drew the machine along, this blade was forced under the ridge of soil so that the potatoes were pushed up on to a moving chain elevator. This carried the tubers back on to a second elevator. The shaking about knocked most of the dirt off them and they fell out behind the machine in neat, clean rows.

All the youngsters enjoyed the work. They felt rather tired at the end of the first two days but after that the work seemed to get easier and easier.

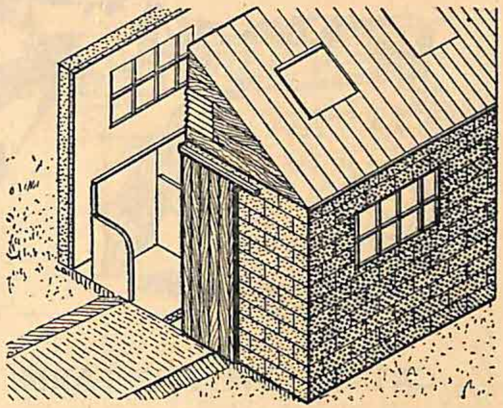


Fig. 8. A modern cowshed. Notice (*a*) the concrete ramp leading up to the raised floor, (*b*) the windows and roof lights for light and ventilation, (c) the feeding passage behind the stalls. (See Fig. 12 for plan.)

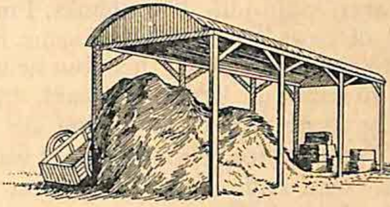


Fig. 9. A Dutch barn. What crops are stored in barns of this kind? How does it differ from the old English type of Figs. 6 and 7?

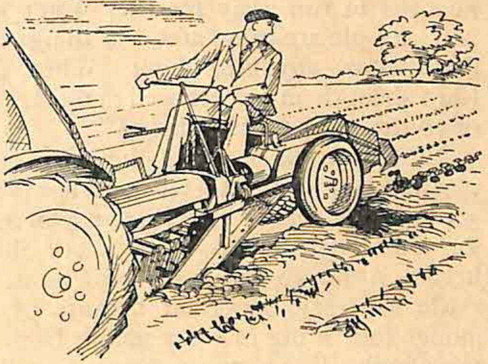
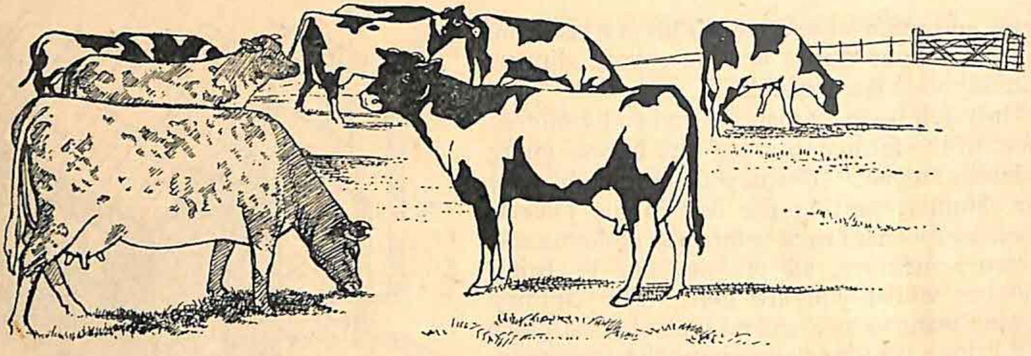


Fig. 10. The digger lifts the potatoes, shakes off the soil and throws them out ready for the pickers.



# CATTLE ON THE FARM

Fig. 11. Dairy cattle in the pasture field. Two breeds are shown—Friesian and Dairy Shorthorn. The Friesians are black and white, the Shorthorns are red and white or red. How else can you distinguish them?

ONE dinner time Jeff and Joan decided to go to look at the cows. On their way from the potato field they had passed the field where the cows were grazing. Now they stopped and leaned on the gate. "Let's go a bit nearer," said Jeff. "No thanks, I'm a bit afraid of cows." Jeff felt the same for he didn't know much about them but he wasn't going to admit it. "Pooh!" he said, "there's nothing to be afraid of." "You are quite right," said a voice behind them. It was Mr. Homer who had come up without their noticing him. "Most cows are quiet, harmless creatures. Of course, they are full of curiosity and will often all move towards you to have a good look at you, but there's no need to run away for they won't hurt you. People are often afraid of things they don't know anything about. When they learn about them and get used to them, quite often their fear turns to liking."

"Will you tell us about the cattle then, please?" said Joan. "I'll tell you a few things and then you will be able to learn a lot more for yourselves. The cows are Dairy Shorthorns. Although this is a mixed farm, the cattle are very important because of the money they bring in every month from the sale of milk. These cows give 50 or so gallons of milk every day. The milk is bought by the Milk Marketing Board at a fixed price and I get a monthly cheque for between £100 and £150. That's very useful for paying wages, bills and day-to-day expenses. The cows also provide manure, which helps in growing crops like potatoes and roots."

"How many cattle do you keep?" asked Jeff. "There are twenty in milk, five dry, and another twenty young cattle. Some of these are calves and heifers that will go to the dairy herd when they are between two and three years old. The others are being fattened for the butcher. Cows are kept to give milk, but before they can do so they must be mated with a bull and have a calf. A cow has one calf a year. People want milk all the year round and so the farmer arranges that his cows do not all calve at once. The bull is a pedigree Shorthorn whose mother and grandmother gave good yields of milk. Most cows stay in the milking herd for six or seven years."

"How can you tell a good cow?" asked Jeff. "Just look at that young heifer over there," said Mr. Homer. "You can tell she is healthy for she has a glossy coat, a bright eye and a moist muzzle. Feel her coat to see if the skin moves easily over her ribs. She

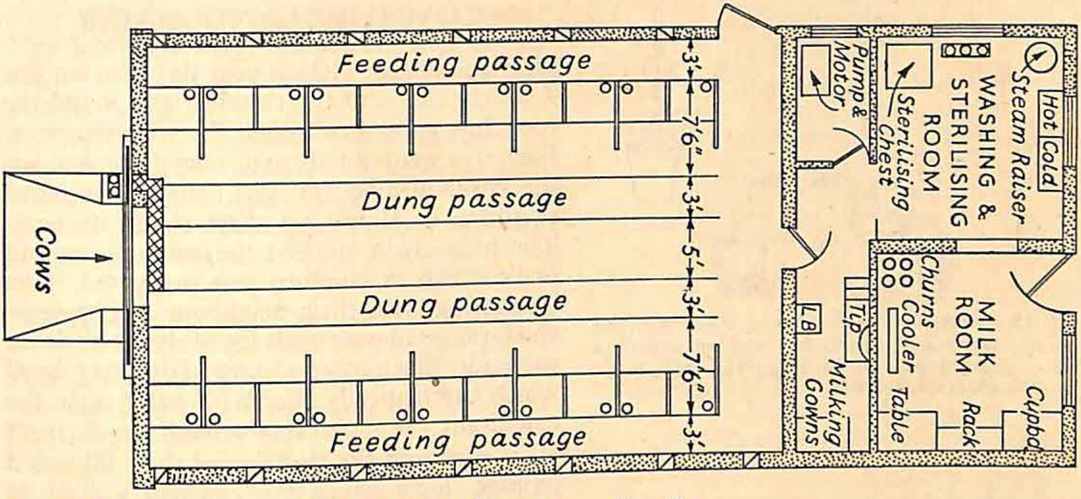


Fig. 12. Plan of a modern cowshed and dairy. Compare this with the drawing in Fig. 8.

has a deep, roomy body, a large bag or udder and her milk veins are long, prominent and winding."

"Why does she stand mooing near the gate?" asked Joan. "Well, she only calved a few days ago. We took her calf away this morning and put it with the others. It will still get a little of its mother's milk but will soon be taught to drink gruel out of a bucket and then its food will gradually be changed to solids."

"What about the food of the mother cows?" said Joan. "In the summer they get nearly all they need from the grass in the fields. If the grass is good a cow will get enough food and give a couple of gallons of milk a day, but those that give more get a ration of other food called concentrates. These are things like cattle-cakes or meal made by grinding together grain, peas and beans grown on the farm. During the summer the cows are only brought into the cowshed for milking and to receive their ration of concentrates. In the winter they stay in the shed all night but go out in the fields during the day, unless the weather is very bad."

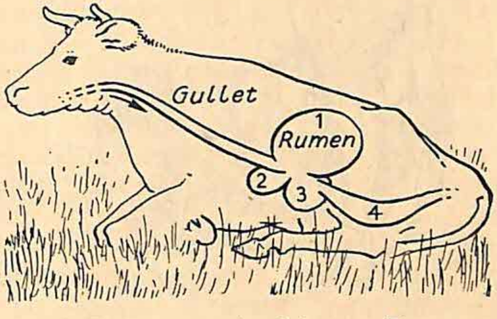


Fig. 13. The four stomachs of the cow. The rumen is the stomach in which grass is stored before being chewed.

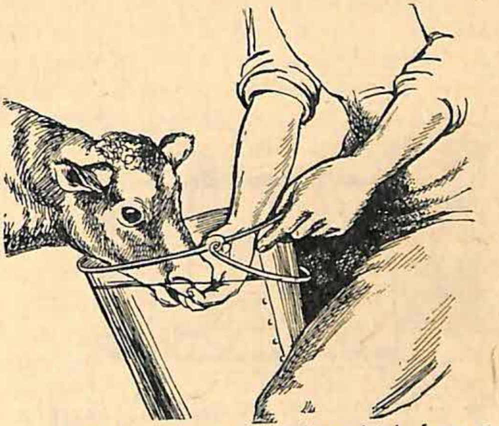


Fig. 14. Teaching a young calf to drink from a bucket.

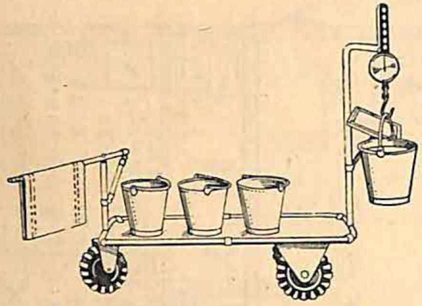


Fig. 15. Trolley used in the milking shed. It carries water and towels for washing udders, a spring balance to weigh the milk and a chart to record it.

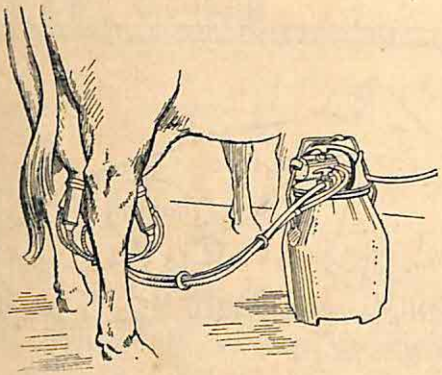


Fig. 16. Machine milking. Notice the covered bucket and the teat cups on the cow's udder.

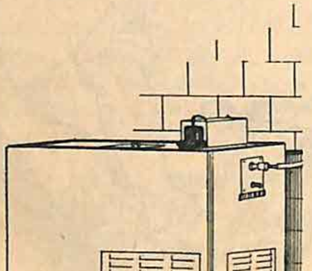


Fig. 17. Refrigerator to cool the milk. This type is used where the water supply is insufficient for the cooler shown in Fig. 18.

## COWSHED AND DAIRY

ABOUT three o'clock next day, the cousins went down to the cowshed and found the cows just going in through the wide entrance. Each cow went quietly to its own place, and Joe the cowman, and the girl, Hoppy, fastened each one by slipping a chain round its neck. The head-chain allowed the cows to eat and to lie down in comfort, but prevented them interfering with their neighbours. The cowshed was fitted with stalls for twelve cows down each side. Each cow had a metal drinking bowl which automatically filled with water when the cow drank. A glazed food trough was in front of it. Between the trough and the wall was a passage down which the cowman walked to fill the troughs with food.

When the cow was standing, her hind feet were at the edge of a channel. As a result, all dung fell into this dung channel and the cow had a clean place in which to lie. This also made cleaning out the cowshed easier. When the cows were all fastened, their hind-quarters were brushed down with a damp brush, and then Hoppy, dressed in a white overall, came in from the dairy wheeling a trolley. On the trolley were several buckets. She stopped behind the first cow to be milked, took out of the first bucket an udder cloth, squeezed out some of the warm disinfectant water, and gently rubbed the udder and wiped the teats.

Meanwhile, Joe, also dressed in white milking overall and cap, had come from the dairy carrying a four-gallon milking pail complete with lid and teat cups. By means of a rubber tube he joined it to a tap on a pipe-line that ran down each side of the cowshed above the food troughs. Next, he drew a little milk from each of the cow's four teats into a small cup. Then he fixed the cups on the teats and milking began.

They proceeded in this fashion all round the shed using two milking pails and leaving them on the cows not more than four minutes each. Egg-timers on the trolley were used to check the timing. As each pail was taken off, the milk was weighed with a spring balance that hung from a hook on the trolley. The amount was written on a pad which lay on a tray just by the balance.

"Come on," said Joan, "let's go and look in the dairy." They went round the outside and found Mr. Homer just going into the dairy himself. "I see you took my advice and came to learn more for yourselves," he said. "Now what did you notice?" "Joe and Hoppy were very quick, quiet and clean. They seemed to be always washing themselves or the cows' udders or the teat cups," replied Joan. "Yes—those are the important points. In the dairy, cleanliness is our motto."

As they went in they heard the low hum of the electric motor that drove the milk pump. Just then Joe pushed open a swing door and brought in a bucket of milk. He mounted a couple of concrete steps and poured it into a large container that stood above a corrugated metal cooler. The milk ran over the surface of the cooler and down into a churn that stood underneath. A rubber pipe ran from a cold-water tap to the bottom of the cooler. Another pipe at the top carried away the waste water.

"You must use a lot of water in the dairy," said Jeff. "We do. Not only is it used for cooling but over there you can see the trough in which the buckets, churns and coolers are all washed, first in cold and then in warm water. Then they are rinsed and placed in the *sterilising* chest which is then filled with steam. You must be careful about these things so as to avoid all risk of dirt or germs getting into the milk. The milk is tested to see if it is of good quality. The law says it must contain not less than 3 per cent butter-fat when sold and not less than 8·5 per cent of solids other than fat, and it must not contain harmful bacteria."

"What happens to the milk once it is in your churn?" asked Jeff. "We put the churns on the platform just outside the farm gates. They are picked up by lorry every morning and evening and taken to a big centre in town where the milk is bottled."

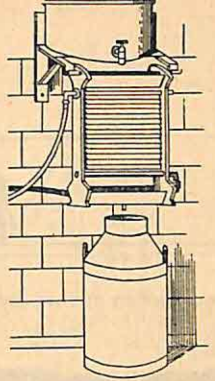


Fig. 18. Milk cooler. Bacteria (germs) grow much more rapidly in warm conditions. The warm milk from the cow is therefore cooled at once by allowing it to drip over tubes through which cold water runs.

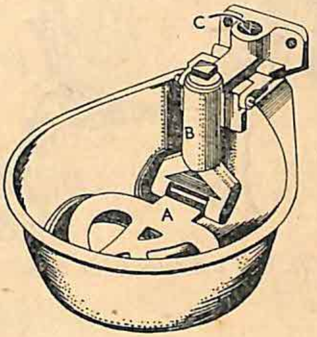


Fig. 19. Drinking bowl for cow. When she presses her muzzle on A the tap B is opened and the bowl fills.

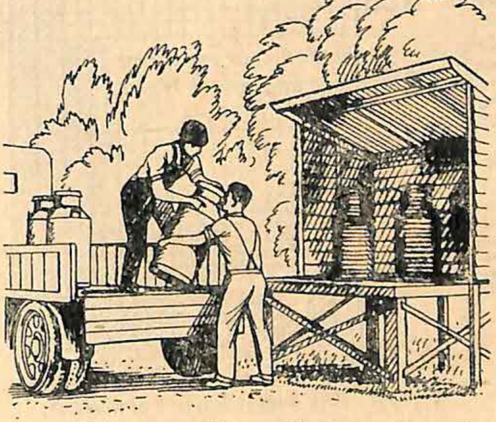


Fig. 20. The lorry collects milk churns from the farm. Why are these placed (*a*) on a raised platform, (*b*) in the shade?

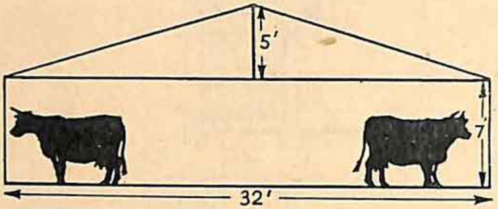


Fig. 21. Cross-section of cowshed.

**1** A good cowshed should allow 800 cubic feet of air space and 3 square feet of window space for each cow. Fig. 21 shows a section across a cowshed. It is 32 feet wide, 7 feet high to the eaves and 12 feet to the ridge. The width allows for a row of cows down each side. How long should it be to house 36 cows?

Draw to scale the side view of the shed showing the position and size of the windows.

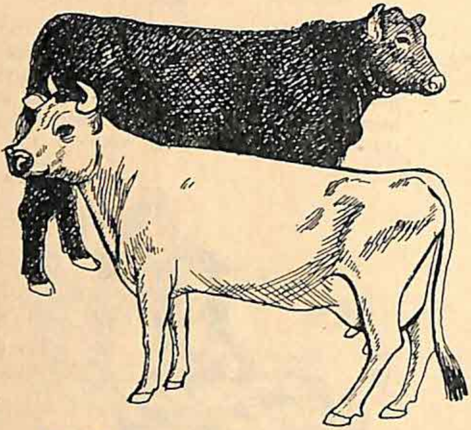


Fig. 22. Beef and dairy cattle types.

**2** Some breeds of cattle are raised mainly to provide beef, others to produce milk. Fig. 22 shows one animal of a beef breed and one of a dairy breed. How can you tell to which type each belongs?

Find out to which type each of the following breeds belongs: Hereford, Jersey, Highland, Friesian, Ayrshire, Aberdeen Angus.

Shorthorns, Red Polls and North Devons are "dual purpose" breeds. What does this mean?

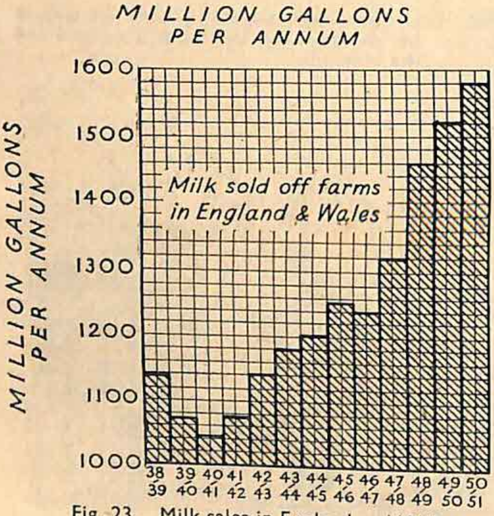


Fig. 23. Milk sales in England and Wales.

**3** Fig. 23 shows how the amount of milk sold from farms in England and Wales has changed from year to year since 1938–9. Why did it fall in the earlier years? How has the large increase in recent years been secured?

**4** Fig. 24A shows how Joe grasped a teat in drawing off the first few drops of milk before attaching the teat cups. 24B shows how hand milking is done. 24C shows what happens in machine milking. The pump in the dairy sucks air from the inner cup to form a vacuum. The pulsometer on the bucket alternately opens and closes the way from the open air to the outer cup. When air is withdrawn, the rubber cup opens again. Explain how (*a*) hand milking, (*b*) machine milking, imitates the action of the lips and mouth of a sucking calf.

**5** The very tiny germs which turn milk sour and others which may cause disease in those drinking the milk cannot be removed by straining. They increase very rapidly in warm milk but are killed if the milk is boiled or kept

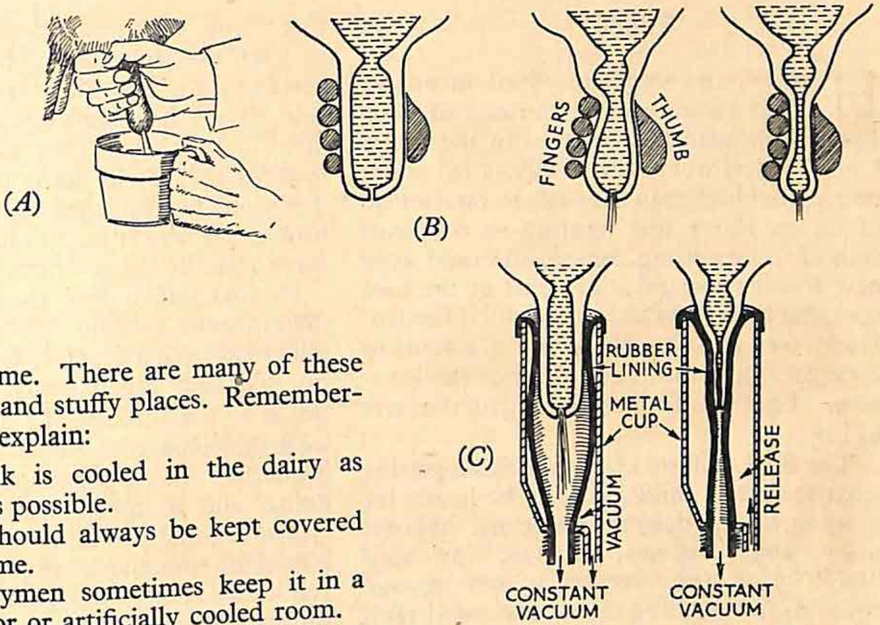


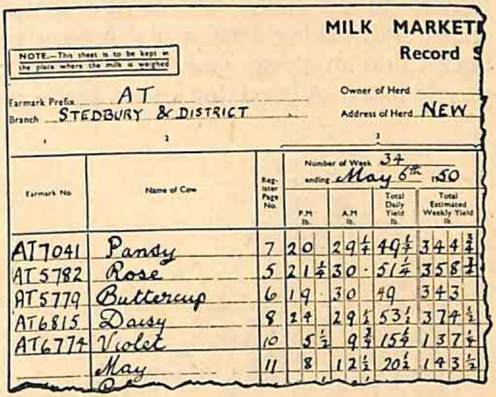
Fig. 24. Hand and machine milking. (A) Drawing off first milk. (B) Hand milking. (C) How teat cups work.

hot for some time. There are many of these germs in dusty and stuffy places. Remembering these facts, explain:

- (*a*) Why milk is cooled in the dairy as quickly as possible.
- (*b*) Why it should always be kept covered in the home.
- (*c*) Why dairymen sometimes keep it in a refrigerator or artificially cooled room.
- (*d*) Why it goes sour more quickly in summer than in winter.
- (*e*) Why some people boil milk in the summer if it is to be kept over night.

**6** An average cow spends about 8 hours grazing and 12 hours lying down chewing the cud. She does each in about 9 spells or shifts in the day. If she has a calf she suckles it three times a day for about 15 minutes each time. She walks about 2 miles during the day and half a mile during the night. About three-quarters of the liquid she needs is got from the grass she eats so she usually drinks only once in 24 hours. She cannot eat very short grass and avoids long grass, preferring it about 4 to 5 inches high.

Watch any cows you can and see if they seem to behave in this sort of way. Find out why they cannot eat short grass and will not willingly eat the tall clumps.



MILK MARKET

Record

NOTE.—This sheet is to be kept in the place where the milk is weighed

Farmark Prefix AT

Branch STEDBURY & DISTRICT

Owner of Herd

Address of Herd NEW

1 2 3

| Farmark No | Name of Cow | Register Page No. | Number of Week 34 ending May 6th 1950 | | | |
|---|---|---|---|---|---|---|
| | | | P.M lb. | A.M lb. | Total Daily Yield lb. | Total Estimated Weekly Yield lb |
| AT7041 | Pansy | 7 | 20 | 29¼ | 49¼ | 344¾ |
| AT5782 | Rose | 5 | 21¼ | 30 | 51¼ | 358¾ |
| AT5779 | Buttercup | 6 | 19 | 30 | 49 | 343 |
| AT6815 | Daisy | 8 | 24 | 29½ | 53½ | 374½ |
| AT6774 | Violet | 10 | 5½ | 9¾ | 15¼ | 137¼ |
| | May | 11 | 8 | 12½ | 20½ | 143½ |

Fig. 25. Part of a milk recording sheet showing how a register is kept of the milk yield of each separate cow. Cows are milked for about 300 days after having a calf. The amount of milk given grows less towards the end of this period. After this they are "dry" for a time, that is they give no milk at all until the birth of their next calf. Which of the cows in the above chart are nearing this dry stage?

## SHEEP

HARRY, the shepherd, lived in one of a pair of cottages at the end of Back Lane. The gamekeeper lived in the other. One day Jeff went with Wally, a lad about two years older than himself, to take a load of things Harry was wanting—a couple of rolls of sheep netting, some hurdles and some new feeding troughs. The rest of the load was chaffed hay for extra feeding, if needed. Harry was just starting off for the farm so they gave him a lift back as far as the Five-acre. (Find this field on the map of the farm in Fig. 1.)

The flock of forty ewes were there, getting what feed they could, so as to be handy for dipping. Harry didn't like tractors. "Nasty, noisy, smelly things, tractors," he said. "Oh!" said Jeff, surprised that anyone could dislike what he thought so wonderful, "but at least they are very useful." "Yes, but I still don't like them. No more do my sheep. You've got to handle sheep quietly if they're to do well. It's no use jumping about and making a noise if you want your flock to do anything; you only frighten and puzzle them. A good dog knows better than that. You watch my dog. I'll send him to fetch the sheep here. See, he runs off, keeping quite low till he gets on the other side. Then he stands up and gives just a little low bark and they all begin to move towards us. If one starts off in the wrong direction, he just runs ahead and turns it back to the way it has got to go. That's the way to handle sheep—firm, but quiet."

He told Jeff to open the gate a little and then to stand back out of the way. He himself stood back a few feet from the gate and his dog sent the animals forward. They began to file through the gate and as they went the shepherd counted them. "Counting is another thing a shepherd must always be doing, and it mustn't send him to sleep, either, especially at lambing time!" "When is lambing time and what do you have to do?" Jeff asked. Harry was glad enough to talk, for his job often gave him many hours with no one to talk to except his dog and his flock. "Let's start at the beginning," he said, as they walked along behind the flock.

"In August we go through the flock of ewes and pick out any that are too old or not very fit. If the master wants more to take their places he goes off to the sales where he

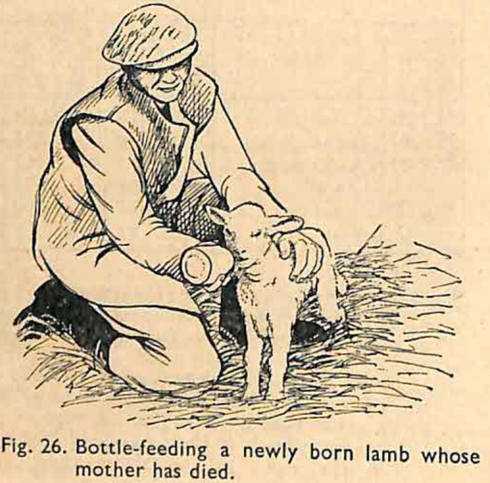


Fig. 26. Bottle-feeding a newly born lamb whose mother has died.

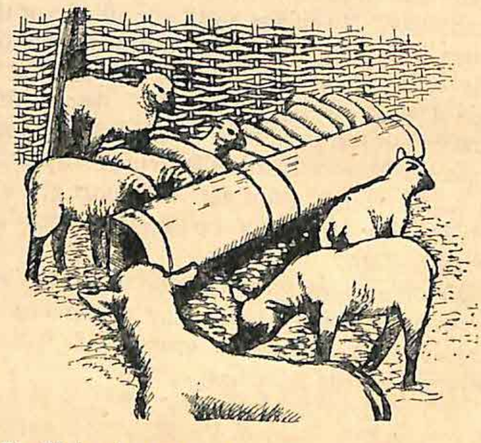


Fig. 27. Lambs feeding from trough. The narrow creep, or gap in the hurdle fence allows lambs to pass through but not their mothers.

can buy strong young ewes raised on the hill farms. During September the flock is fed well on a field of sainfoin or on young grass. The next month they run with the ram. He stays with them for about six weeks. Then the flock is dipped, which is why they are down here now. After dipping, the flock grazes anything that is available, which means that they've got to take plenty of exercise to get their food. This gets them in good 'hard' condition. By January the ewes are fairly heavy in lamb so about a month before lambing I start to give them extra food in troughs. That is the time I have to keep a sharp look-out for any that are 'cast', which means they've fallen over on their backs and can't get up. If they are left that way for long, they will die.

"Lambing starts about the end of February. I shall use that netting and hurdles you brought up to fence off a corner of the field by my cottage for the flock to lie in at night, so that I don't have to wander all over the place to find a ewe in the dark. Most ewes have their lambs without trouble, but you can never be sure so I like to be handy just in case help is needed. It's a busy time, but so is any other harvest period. Extra food—cake and meal—has to be given in the troughs. Later the lambs have to be separated from the ewes at feeding time so that they can be given extra rations.

"In the warmer weather, about May, the ewes are clipped for their wool, and then both ewes and lambs are dipped. That is done to prevent scab, but it also helps to keep the fly away. I have to keep a close watch for the blow-fly, for if a sheep is 'struck' the eggs quickly hatch into maggots that eat their way into the flesh and cause horrible sores."

Later that day Jeff saw the flock being dipped. They were passed one at a time through a bath of prepared sheep dip in which they were kept for one minute each. The policeman from the village came up and timed the dipping. Jeff found out that this was done to prevent a disease called sheep scab. Harry told him that foot rot was another trouble that sometimes occurred, especially on wet land. He prevented this by careful attention to the ewes' feet.

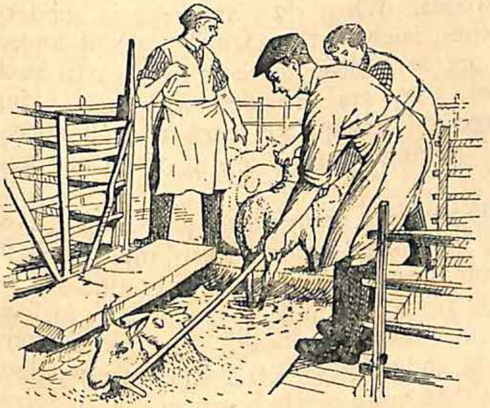


Fig. 28. Dipping sheep to kill harmful insects in their fleeces and prevent disease.

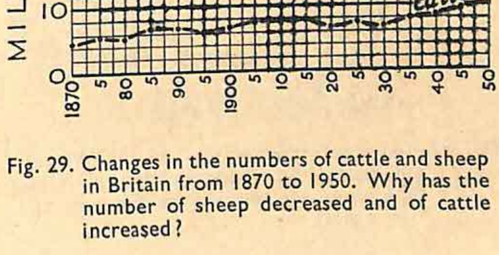


Fig. 29. Changes in the numbers of cattle and sheep in Britain from 1870 to 1950. Why has the number of sheep decreased and of cattle increased?

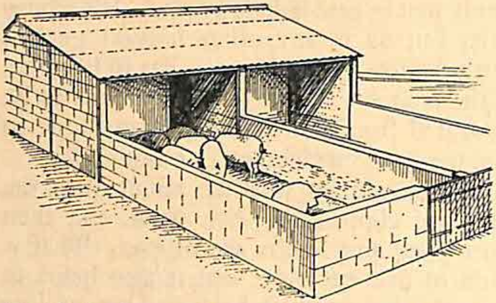


Fig. 30. Pig-house on a mixed farm. Note the solid wooden doors to the pens and the sheltered doorways to the houses.

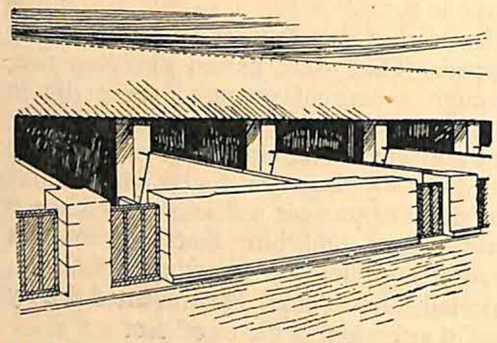


Fig. 31. Series of pig-houses on a farm which specialises in pig rearing.

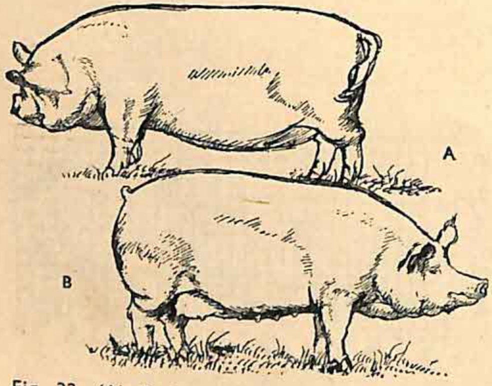


Fig. 32. (A) Pork type of pig (Middle White); (B) Bacon type (Large White). What differences can you notice between the two types?

# PIGS

ONE Sunday afternoon Jeff and Joan went down to the farm about half past three. There was nobody about except Joe, the cowman. He told them that Mr. Homer would soon be feeding the pigs so they went round to the sties. There were two young pigs in the first sty lying contentedly in a corner. They got up and came to the gate when Jeff leaned over. "Let's get a few lumps of turf for them," said Joan, and she ran round the back of the barn to get them. They were leaning on the wall watching the pigs nuzzling the turf when Mr. Homer arrived with two buckets of food. At once the pigs set up a loud squealing, but this soon ceased as they thrust their noses into the troughs.

"Aren't they greedy things?" exclaimed Joan. "Oh no," said Mr. Homer, "they are really very careful eaters and will not overfeed like cows." This piece of news surprised both the cousins and made them wonder if any of their other ideas about pigs were wrong.

"Pigs are very dirty, though," Joan said. "You are wrong again," was the reply. "It is true that they grub about in the soil, but they do that in search of roots and nuts, which were their foods in the days when they ran wild in the woods. When they are kept in modern piggeries, such as the Danish type of house, they are very clean in their habits. In such houses, they are provided with a dunging passage and very quickly learn to use it so that their sleeping quarters are always clean and dry."

"Do you keep many pigs?" asked Jeff. "Not now," said Mr. Homer. "I kept many more in pre-war days. Then I often had difficulty in getting rid of my milk, so I was able to feed them on skimmed milk left over from butter-making, and the whey left from cheese-making. It was then quite easy to buy meal and brewers' grains too. The few pigs I keep now have to feed on what can be spared from the cattle food plus kitchen waste that has been specially cooked. Sometimes the barley has been badly 'laid', that means tangled and flattened by bad weather. There are then quite a lot of dirty and twisted straw and heads. These are got up by the horse rake. When this happens I try to get several young pigs and dump all these rakings in the yard and turn the pigs loose on them. All I need to do is to provide water and perhaps a little swill and some potatoes and the pigs soon fatten up and are ready for killing by Christmas."

"I see," said Joan. "The pig is a very useful animal for using up food that might be wasted." "You're quite right, but don't forget that the pig also produces a lot of manure. In a year one pig will give a ton of dung. That is one reason why today, when farmyard manure is dear to buy and difficult to get, many nurserymen keep pigs to get manure for their greenhouse and market-garden crops."

Just then the two pigs at the trough finished their meal and came back to the gate. "When will these pigs be ready for the butcher?" asked Jeff. "About Christmas time," was the reply. "They are Large Whites that I bought in the market eight weeks ago. They should be ready to kill for bacon in 6 to 8 weeks' time. I shan't be allowed to kill them here on the farm, though that is what we used to do many years ago. Today, most pigs go to a bacon factory, where they are killed and the carcases cured for bacon or sold as pork."

Long afterwards, when Jeff was learning to be a farmer himself, he remembered this first talk about pigs and their ways. He had gone to visit a farm where a great many pigs were kept. There he found that pigs, like cattle and sheep, were of many breeds. Mr. Homer's Large White was one of the best kinds for the bacon curer. This breed grows very quickly and gives about 160 lb. of meat if killed when seven or eight months old. The Middle White and Berkshire breeds are smaller and plumper kinds, and better for the pork butcher.

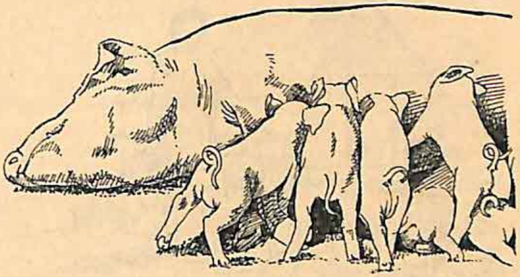


Fig. 33. Breeding sow and piglets.

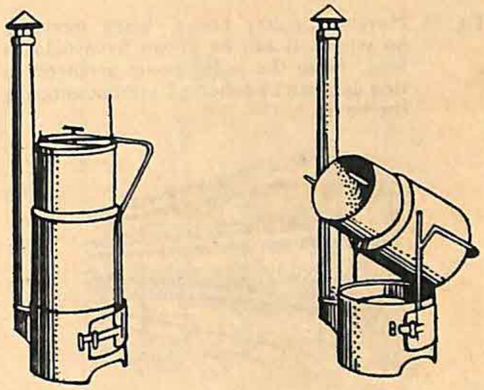


Fig. 34. Farm boiler for heating swill to be fed to pigs. Heating kills harmful germs.

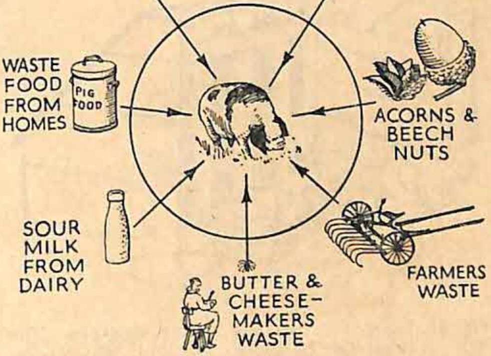


Fig. 35. The pig converts many kinds of waste into good food.

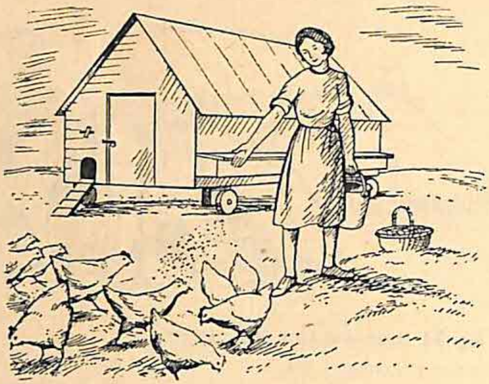


Fig. 36. Movable poultry house. Being mounted on wheels it can be drawn from field to field. Note the laying boxes arranged so that eggs can be collected without entering the house.

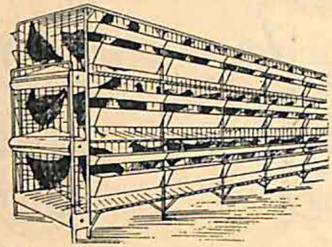


Fig. 37. Laying battery. Each hen has its own living space and food and water troughs. Eggs roll over the sloping floor into a channel in front. One worker can look after a large flock on this system.

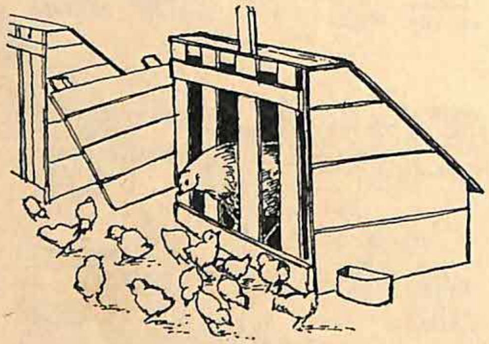


Fig. 38. Coop for hen and young chickens. The front can be closed at night. The centre board, when drawn up, allows the hen to get out.

## POULTRY

"COME and help me feed the poultry," called out Mrs. Homer one day to Joan. They went first to the granary where Mrs. Homer filled a bucket with corn and gave Joan another one half-full. "It's not proper corn, is it?" said Joan. "No, my dear, it's what we call 'off' corn. It's the small and poor stuff that is no use for making into flour. We save all of it for the poultry. They get other things, too. They have a feed of mash in the morning. That used to be made from bran, ground oats, middlings, maize or soya meal and perhaps fish meal, but you can't get all those things today." "Do they eat very much food?" asked Joan. "A laying hen will eat 4 to 5 ounces of corn and mash a day, but not quite as much when not in lay.

"I expect you've noticed that all our birds are Rhode Island Reds. The Rhode is what we call a dual purpose bird. That means that the hens are good layers and the cock birds are good table birds, weighing about 4 lb. when they are four or five months old. We have kept birds specially to kill at Christmas time that have weighed over 8 lb. Any hens that are not good layers we pick out and fatten for eating, too. About the middle of September we go through the whole flock. Those that stopped laying early will have finished moulting and be newly feathered, so we can easily sort them out for fattening. This taking out of the poor stock is called *culling* and is very important if you want to improve the quality of your birds."

Whilst they had been talking they had walked from the granary to the paddock. "All our fowls are kept in this type of house," said Mrs. Homer, who was by this time surrounded by hens. She threw out several handfuls of corn and the clucking ceased. Then Mrs. Homer made sure the birds had plenty of water. "Let's see how many eggs we have today." On one side of the house projected a row of nesting boxes, covered by a weather-proof lid. When Joan lifted the lid, she saw that each box had straw on the bottom. The hens had made this into the usual nest shape. The hen enters the nesting box from the house, but the lid allows the poultry-keeper to gather the eggs without going into the house. The eggs were gathered and put in the bucket.

Joan noticed that there were wheels on the house and asked what they were for. She was told that hens have to get a lot of their food for themselves and are very useful scavengers. The houses were on wheels so that they could be moved about to different fields. When the corn had been cut and carried, poultry were taken to scratch over the stubble and pick up the heads that had been trodden into the ground and any grains that had been shaken out of the ears.

They went round to other pens which were in Five Acre and Backfield and then went on to Cow Pasture to fetch the ducks from the pond. This was easy. They just rattled the bucket and the ducks soon waddled across the field, playing "follow-my-leader". "How sensible they are," thought Joan as Mrs. Homer opened the door of an old loose-box near the pigsties, which was the ducks' home. When Mrs. Homer had put some food for them in a trough, Joan asked about the eggs. "I picked those up this morning before I let them out. Ducks always lay early if they lay at all. But we don't really keep ducks to lay. These are Aylesburys and are table-birds. They lay some eggs, but most of those we set under hens or sell for hatching."

That reminded Joan that when they had been talking about culling and table birds she had thought that if they killed many there would soon be none left. "Do you hatch all your own fowls and ducks?" she asked. "Not all. We send many of our eggs to a hatchery to be hatched in heated boxes called incubators, but all our ducks are hatched under our own hens." Mr. Homer came up just then and said, laughingly, that hens nowadays had nearly forgotten how to bring up chickens or ducklings, just as they had forgotten how to fly.

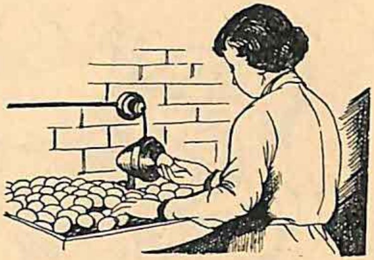


Fig. 39. Inspecting eggs by holding them in front of a strong light.

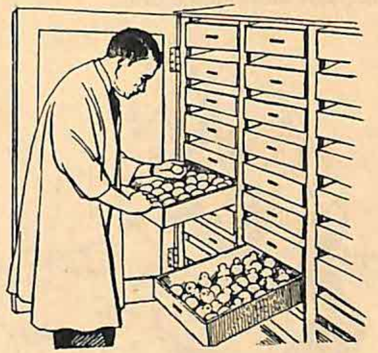


Fig. 40. An incubator, or heated cupboard, used for hatching eggs on a big poultry farm. The eggs are turned daily.

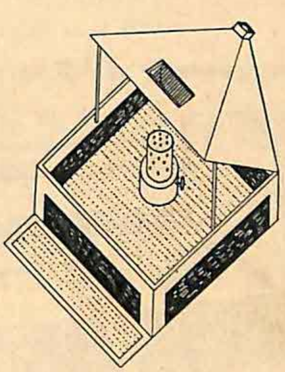


Fig. 41. A brooder for rearing young chicks without mother birds. The lamp provides warmth. The floor is of perforated zinc. Flaps of felt close the entrance and sides.

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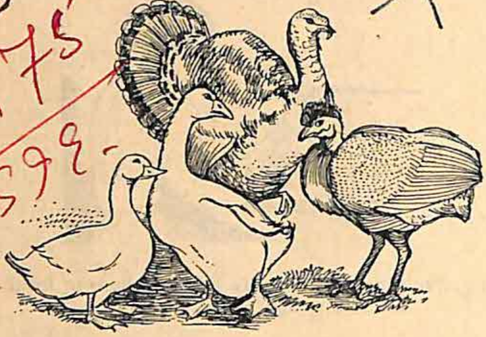

Fig. 42. Table birds on the farm.

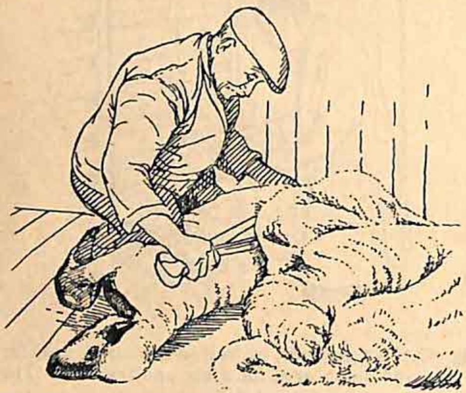

Fig. 43. Hand shearing of sheep.

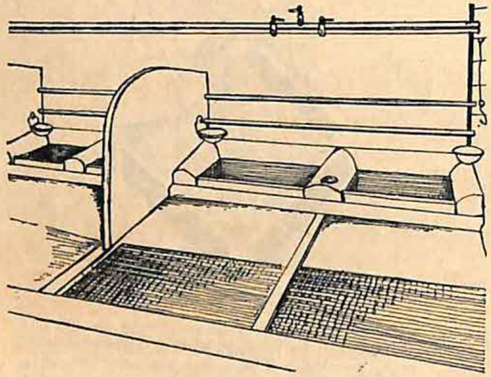

Fig. 44. Cowstalls in modern milking shed.

**1** Sheep may be *wool type* or *meat type* or *dual purpose*. What do these terms mean?

Mountain sheep range widely when feeding, but Merinos keep together in a flock. In what kind of sheep lands would this habit be useful?

**2** Find the names of the birds shown in Fig. 42. All are useful *table birds*. What does this last term mean?

**3** An advertisement of a bacon-curing firm says:

> "Every two sides of home-grown pig have attached a couple of hams, forehocks, loins, cheeps; also kidney, liver and trimmings for pies and puddings (to say nothing of trotters and a lot of lard). You don't get those with imported bacon, yet they're good, rich food. . . .
>
> Pigs breed fast and grow fast. Every pig-keeper gets a handsome reward for his work."

Can you say what parts of the pig provide the products named? What other products are obtained from pigs?

**4** Fig. 35 shows how useful the pig can be in turning waste into good meat. What other food is necessary if it is to grow quickly? How does this help to explain why fewer pigs are fed in Britain today than before the war?

**5** Fig. 43 shows a sheep being sheared in the old-fashioned way with hand shears. Today most shearing is done with clippers driven by electricity or by a small petrol engine. Make a list of the ways in which the new method is better than the old. What happens to the cut fleeces afterwards?

**6** Fig. 44 shows part of the inside of a good type of cowshed. Find in it the vacuum pipe-line, the drinking bowl, the feeding trough and the dung passage. Why is the floor of the standing space raised and roughened?

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**7** Fig. 5 shows one type of gate-fastener. Another is shown in Fig. 45. Explain how each works. Make sketches of any other types you can find.

Gates are now sometimes replaced by *cattle grids* over which motor traffic can pass, but not cattle. Explain how the grid works.

**8** The man in Fig. 46 is hand milking. Why does he wear overalls, wellingtons and skull cap? Why is the bucket hooded and the stool made of metal?

**9** In the first three months of 1947 hard frosts and heavy snowstorms were followed by great floods when the snow melted. Farmers in Britain lost £20,000,000. Four million sheep and lambs died and so did 50,000 head of cattle. 270,000 acres of winter corn and the produce of 80,000 acres of potatoes were lost. Explain how the weather brought about each of these losses.

**10** The pig produces 1 lb. of pork from each 5 lb. of dried food it eats, the sheep 1 lb. of mutton from each 16 lb. of dried food and the bullock 1 lb. of beef from each 22 lb. of dried food. It looks as if mutton should be three times and beef more than four times as costly as pork. Find the price your mother is charged for each. Why do these prices differ much less than you would expect?

**11** Two hundred years ago eight out of every ten people in England and Wales lived in the country. Today, eight out of every ten live in towns. Make a list of the kinds of work done by country people and another of those done by townspeople. How do your lists help to explain the change?

**12** Men who wish to become farmers sometimes start as smallholders. They work small areas of land, growing crops (usually vegetables) for sale and keeping poultry and pigs. In what ways are these animals suited to his conditions? Remember that he and his family do all the work.

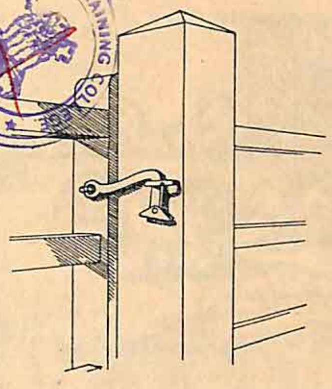

Fig. 45. Another type of gate-fastener.

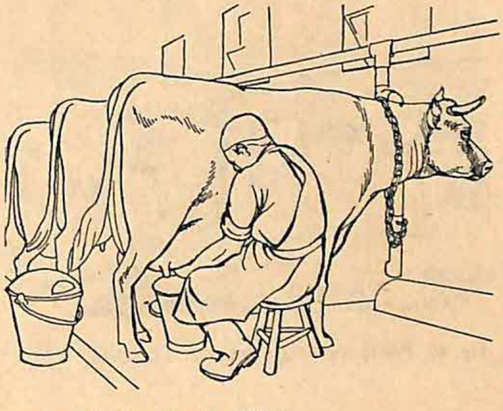

Fig. 46. Modern hand milking.

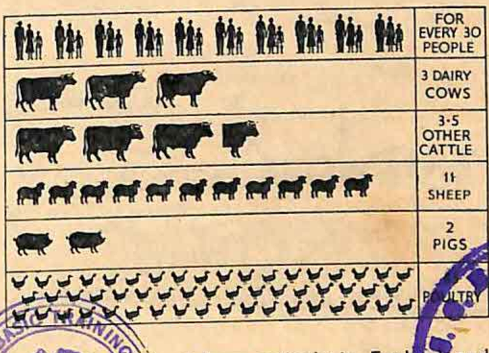

Fig. 47. People and farm animals in England and Wales.

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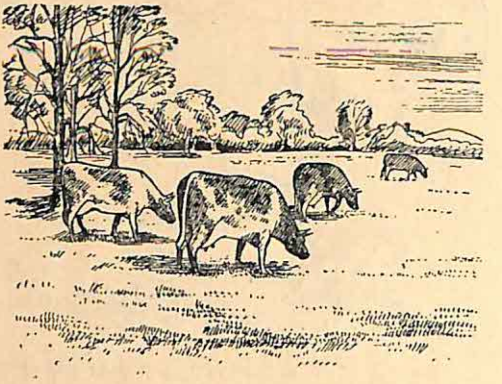

Fig. 48. Cattle feeding on permanent pastures with tree shade.

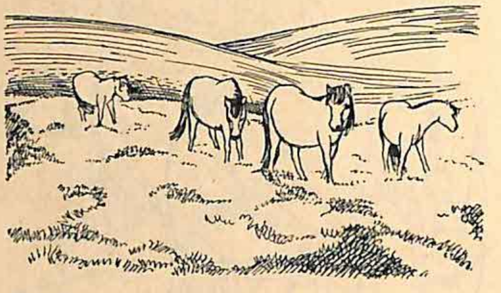

Fig. 49. Ponies on rough moorland pasture.

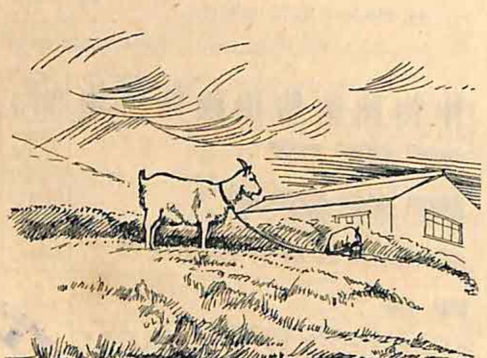

Fig. 50. Goats can feed on coarse grasses along the roadside.

## GRASS

JEFF had spent Saturday afternoon with Mr. Homer, rabbiting on Upshott Hill. As they walked back to the farmhouse he asked the farmer why he ploughed some fields, grew hay in others and left the Hill just wild—was it so that he could have rabbits when he wanted them? Mr. Homer laughed at the last question.

"No, my boy. I'd be glad to be rid of the rabbits. They are much too fond of my garden stuff and the best bits of pasture, not to mention the young field crops. As old Harry told you, we only use the hill for the sheep to graze occasionally. It's what we call *rough grazing* land. The pity is that about a quarter of the land of Great Britain is like it, of little profit to any farmer. All the moorlands and most of the hill country is so cold, windy and rainy that it is no use trying to cultivate it—corn won't ripen, frosts come too early and last too late for root crops, and only poor grasses will grow on it. Much of it is too steep to plough. Look at the soil, too—it's sandy here, and on the moors much of it is sour and peaty. Hardy sheep can find enough food to keep them alive—the young shoots of heather help out the grass—but they won't fatten on it.

"Fields like Bushy Bank and Cow Pasture down along the stream are what we call *permanent pastures*. They are nearly always under grass. Because we seldom plough them many people would call them uncultivated, but that is not correct. I expect you have learnt at school that plants feed on the soil. If we want good crops of grass we must see they are properly fed and we must prevent the useless weeds from stealing the food. Those young bullocks in Bushy Bank are fattening on the good grass, but they are putting back some of the grass food as manure."

"How do you know how many young beasts to put in the field?" asked Jeff. "Now that is a real problem," answered Mr. Homer. "It is the young grass, before it flowers, that is most feeding. Too many cattle will eat the pasture down so that the grass has no chance to grow, but too few will let much of it grow tall and tough. If the season is a dry one the grass will grow slowly and a field may feed only half as many beasts as in a wet season. I have to buy and sell young cattle so as to try and make the number fit the grass crop. Every year, of course, there is most good pasture in the early summer, so then every farmer wants young stock for fattening. At the end of the summer and during the autumn he sells these fattened beasts to the butcher. That, you see, is why your mother can buy English beef at some times of the year, but must be content with imported at other times."

"But what about your dairy cows?" said Jeff. "You must keep them all the year round." "That's true," replied Mr. Homer, "and it doesn't make the farmer's job any easier. Cows in milk and ewes with lambs take more from the pastures than they give back in manure. Young animals need what are called phosphates to make bone. They get these, of course, in the milk. I have to put them back into the soil by dressing the fields with fertiliser."

"Even good pasture is not enough if the cows are to give a plentiful supply of milk. You saw them having this extra food in the cowshed when they were being milked. In winter there isn't enough grazing to keep the cattle fit and well, much less enough for milk producing. In the old days we used to depend on hay to make up for the lack of grass, and we still make all we can. Nowadays, however, *silage* is being used instead of hay. Grass and other green crops are cut and stored in tall towers or pits without drying. If properly made this is richer food than hay and the cattle like it better."

Before they parted and Jeff went home to tea, the farmer had one more thing to say about pasture. "If you are going to be a farmer the sooner you begin to learn about grasses the better. How many kinds do you know? And what other plants grow in the pasture fields?"

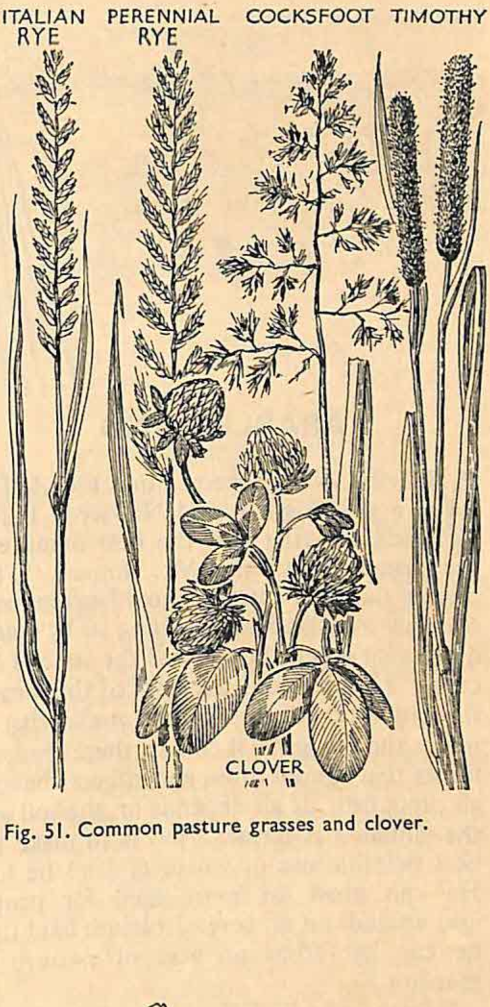

Fig. 51. Common pasture grasses and clover.

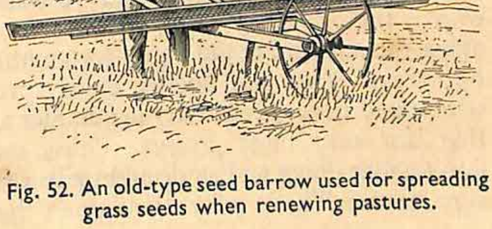

Fig. 52. An old-type seed barrow used for spreading grass seeds when renewing pastures.

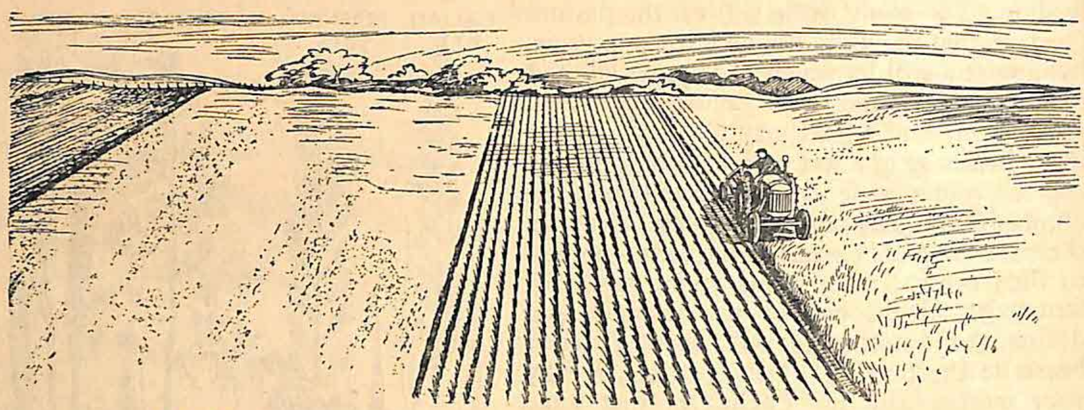

Fig. 53. Arable land. The old grassland is being ploughed up ready for planting. Notice the straight, even furrows made by good ploughing. The land on the left has been harrowed.

## ARABLE LAND

MR. HOMER several times took Jeff on a walk right round Newstede Farm. "There's a saying that the best manure is the farmer's foot," said Mr. Homer. "That means that the farmer should often walk over his own land for in doing so he learns quite a lot about the soil and the state of his crops. I expect you have noticed that nearly three-quarters of this farm is *arable*, that is, under the plough. Of course, there are some farms that are all grass and others that are all ploughed. It all depends on the soil and the climate. A farmer's job is to make the best possible use of whatever land he has. He can grow far more food for people and animals on an acre of plough land than he can get from an acre of pasture or meadow."

"Then why," Jeff asked, "don't you plough all your fields?"

"Well, on this farm it's largely a matter of soil. It's no use cultivating Upshott Hill, even for grass, as we saw when we walked over it the other day. And these meadows along the stream are too damp for anything but grass. They are flooded nearly every winter and never get too dry in summer and that just suits most grasses. Grass roots don't go far down and so drought kills them very soon. That's why they don't have much grass in Mediterranean countries where the summer months are dry and hot. Cow Pasture and Bushy Bank are too wet for corn crops or seeds to grow well.

"Then you've got to think about the soil itself. Some of my soil is heavy clay. It is sticky in wet weather, and so is very difficult to work. When it's dry it sets hard and isn't much easier to plough then. It is very difficult to get what we call a good *tilth*, that is a surface of fine soil in which the seeds can germinate and the young plants grow. Then, too, it stays wet and cold well on into the spring. There is so little air space in clay that water doesn't drain through it easily. Treating it with lime in the autumn often helps to improve a heavy soil.

"In some of the fields over towards Upshott Hill the soil is sandy so that water drains through it very quickly. With the right sort of weather in the spring or by planting in the autumn we could get a crop started. But then along comes a dry spell and the crop fails. The best fields for corn crops especially are these along the high side where the soil is a good *loam*, a mixture of sand and clay."

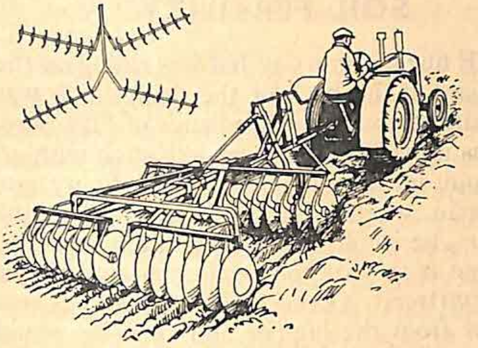

Fig. 54. Disc cultivator. This is used to break up roughly ploughed land. Note how the discs are set.

"I heard George say the other day that you were going to break up one of the grass fields," said Jeff. "How will you set about it?"

"Actually," said Mr. Homer, "I've started on the job. As soon as we got the last hay crop gathered in from The Grove we ploughed the field. That buried the turf and turned the soil up roughly so it was exposed to the air, sun and rain. Soon the frost will help to break down the clods. After that it needs working about with cultivators and harrows to break down the surface soil ready for sowing. This is the field here and you can see where Jock went over half of it this morning with the disc harrow to cut up the turf to help it to rot. Look at the half he hasn't been over. What do you notice about the ploughing?" "The furrows are jolly straight, aren't they? And there isn't a weed or a bit of the old grass to be seen." "Good! Those are two of the most important things in ploughing. Now if you look where the harrows have been you will see how the soil has been broken up and levelled. That's what we call getting a good tilth. If we get that by seed time the drill will be able to sow the seeds at the proper depth everywhere. Then they will germinate better and give a good even crop all over the field."

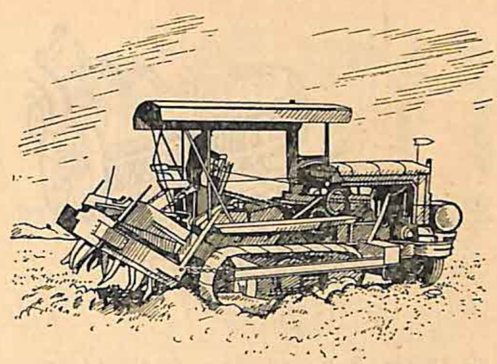

Fig. 55. The gyro-tiller. This heavy implement reaches deeper than the plough and so breaks up the sub-soil.

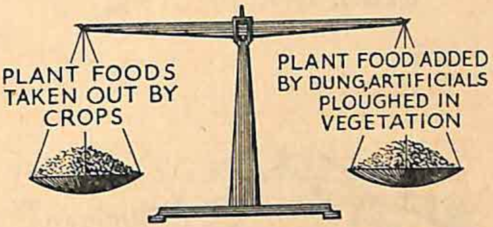
PLANT FOODS TAKEN OUT BY CROPS
PLANT FOOD ADDED BY DUNG,ARTIFICIALS PLOUGHED IN VEGETATION

Fig. 56. To preserve soil fertility a proper balance must be kept.

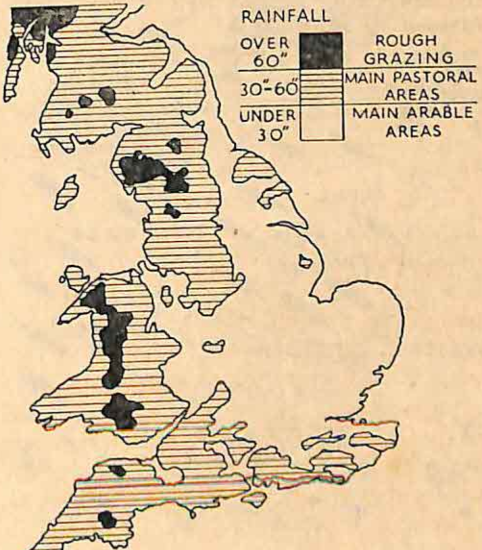

Fig. 57. How does rainfall affect the use made of the land?

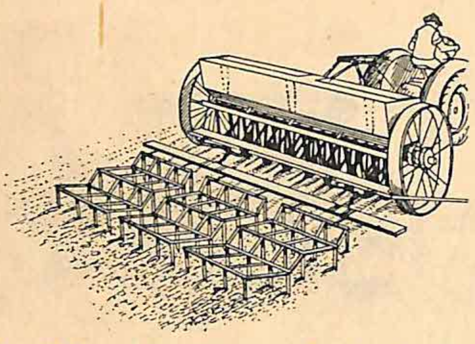

Fig. 58. Seed drill and harrow. Seed and fertiliser are laid in shallow furrows made by the seed drill. For detail of seed drill see Fig. 95. The harrow following behind lightly covers the seed.

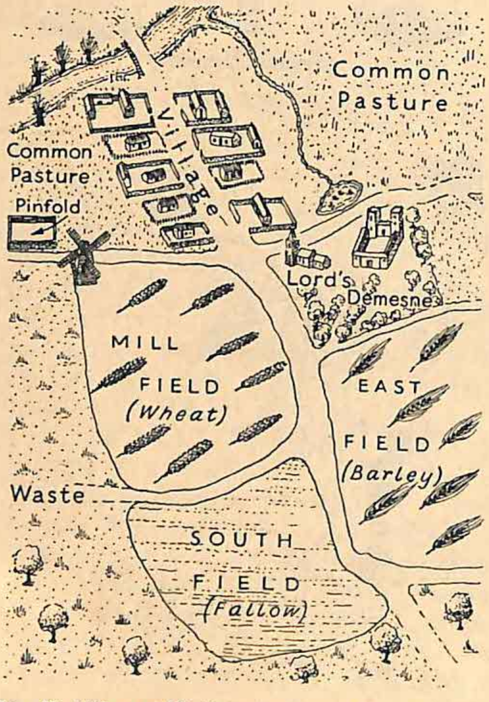

Fig. 59. Village and fields in the Middle Ages showing how the three-field system was worked. What was the purpose of the pinfold?

## SOIL FERTILITY

ONE fine autumn day Jeff was riding on the board at the back of the drill which was being drawn round the headlands of Five Acre. He was armed with a spear-like stick with an iron point and quite fancied himself. Every now and again, when a lump of dirt stuck in the coulters, he would attack it with his stick and dislodge it so that the seed corn could once more run freely. Occasionally, seed would cease to flow from the hopper and then he would shout to Mr. Homer to stop the tractor. They would open the hopper to see if more seed was needed or whether something had blocked up the hole in the bottom through which the seed was fed to the fluted roller.

"That's the last piece of sowing until the New Year," said Mr. Homer. They collected up the empty seed bags and other things and dropped them in the now empty hopper. We'll take the drill back to the farm and get some tea." "You said you'd tell me something about the different crops," Jeff reminded him when they sat down to their meal. "So I did. Well now, the first thing you must remember is that crops feed on the soil, that is, they take out of it certain substances, the chief ones being nitrogen, potash and phosphorus.

"We put these substances back partly by manuring the fields. The dung from the farm animals contains all these substances. But we never have enough of it, and it is a dirty and expensive job carrying and spreading it. That is why we use artificial manures or fertilisers which are clean and easy to handle. Another advantage they have is that they can be mixed to give us just the amounts of each plant food that the soil needs for the crop we are to grow. Finding the right amounts becomes a question of arithmetic. For instance, the 18 cwt. of wheat to the acre I harvested last year took 36 lb. of nitrogen out of the soil; about 175 lb. of sulphate of ammonia will put it back. That particular fertiliser comes from the gas works in town, so you see if we feed the townspeople, they and their factories do give us something in return.

"Nitrogen is mainly used by plants in growing their leafy parts, but if the soil does not provide enough phosphorus it is the roots that suffer. If they are not large and healthy the plant will be small and poor. So, for root crops especially, I must see that the soil has a sufficient supply. I sow superphosphate with the seeds in the drill. I get it from the chemical factory. Thousands of tons of rock phosphate are quarried in North Africa, brought to Britain, and powdered and treated in the factories so that it is in a form the plant can use.

"I have to go to the chemical manufacturers for potash too. Wood ash contains some and is useful in the garden but I need more than I could get from many bonfires. What I need is found in the earth just like rock salt, but it, too, needs treatment in the factory. It is mined in the south of Germany and quite recently thick beds of it have been found deep down in the Middlesbrough district.

"Now you see what a scientific business farming is today if you want good results. And it's not all done by buying seeds and fertilisers and ploughing the land. Planting crops in each field in the proper order, what we call *rotation* of crops, can help a great deal. The roots of some plants such as clover, peas and beans, that the botany books call *legumes*, add nitrogen to the soil. On their roots you can see little lumps or *nodules* in which nitrogen taken from the air is stored. Planting clover is therefore a way of providing nitrogen for next year's crop. Wheat takes a lot of nitrogen and often follows either clover or grasses mixed with clover. Roots can follow wheat for they need less nitrogen and more phosphates. Rotation of crops thus slows down the using up of the plant foods, but you still have to put back what you have taken out. It also helps you to keep your fields clear of disease, insect pests and weeds, which would get a firm hold if you grew the same crops year after year in the same field."

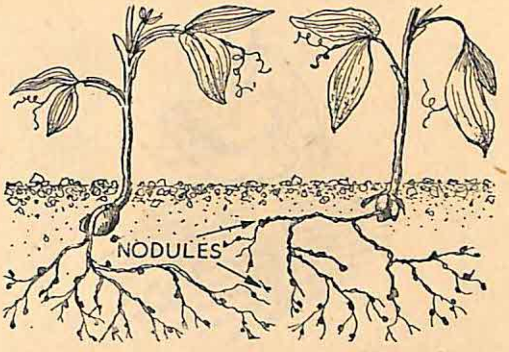

Fig. 60. The roots of legumes (e.g. clover, peas, etc.) bear many small *nodules* which take nitrogen out of the air in the cracks of the soil.

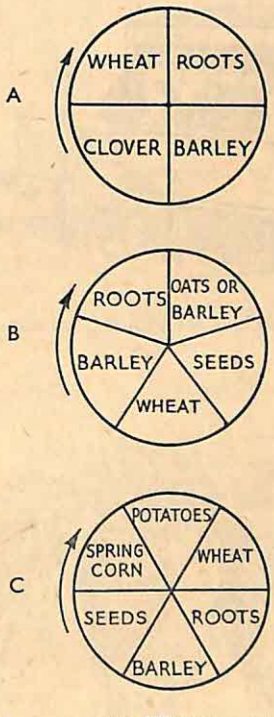

Fig. 61. Crops grown in different rotations.

A 4-year rotation B 5-year rotation C 6-year rotation

# FARM CROPS

"I EXPECT you would like me to tell you about the different crops and why they are grown," said Mr. Homer as they pushed back their chairs after tea. "Yes please, and I'd like you to start with wheat."

"Right you are. You have just finished helping me to sow wheat so you should remember that most wheat in this country is sown in autumn, though there are some varieties that can be sown in February or March which are called spring wheats. In Canada, where the winters are very much colder, nearly all the wheat is spring sown.

"Most wheat is sown with the drill as we did it. It is dressed beforehand with a chemical which clears it of any disease it may carry. Often the machine used in sowing is a combine-drill that sows both seed and artificial fertiliser at the same time in rows 7 inches apart. I have sown wheat broadcast by hand on heavy land following grass when it has not been possible to get a tilth good enough for the drill.

"In the spring we roll the wheat fields. If it has been a mild winter and the crop has grown rapidly, I let the sheep graze them. This encourages *tillering* which means that each plant throws up several new and vigorous shoots from the base and so we get a better yield. Often I give the field a light dressing of a nitrogen fertiliser, such as nitro-chalk, while the plant is still young. At last, perhaps 11 months after the seed was sown, we harvest the wheat. When we've carried it, we may stack it until it is convenient to thresh it. Next year I shall be using a combine-harvester which threshes the grain as it cuts it."

"But you haven't said why you grow it," said Jeff. "Oh no. I ought to have told you at the beginning that it is a *cash crop*—that is to say, most of it will be sold off the farm to the millers.

"Oats is our next most important cereal. We mostly consume oats on the farm, feeding it

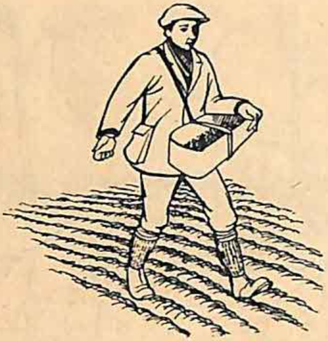

Fig. 62. Broadcasting seed by hand. This was the method used before the invention of the seed drill. What advantages has the seed drill? When is it difficult to use the seed drill?

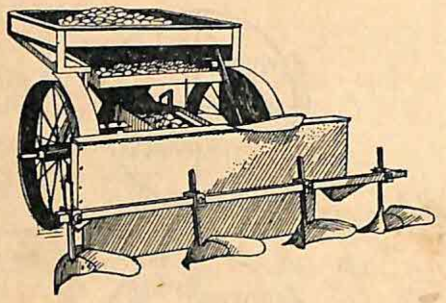

Fig. 63. A machine for planting potatoes.

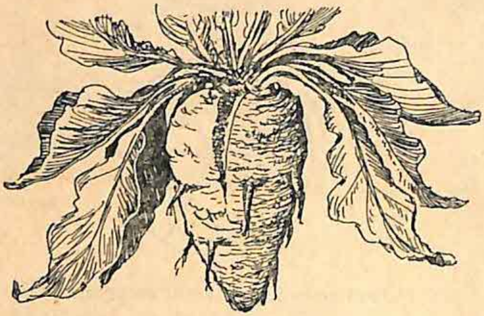

Fig. 64. A well-grown root of sugar-beet.

to our animals. Some is sown in winter, some in spring. The straw is useful for bedding or thatching. Barley is also used for animal feeding, though some goes to the brewers. Its straw is also often used for fodder. Most barley is sown in the spring. Linseed is sometimes grown for the seed which is ground up for cattle, and so is rye though only on a small scale. Rye is more often grown for grazing. Peas, not the kind you grow in your garden but maple peas, whose seeds are hard, are also grown for grinding up into cattle food. I usually sow beans alone but the peas I often sow with the oats and harvest and grind the mixture up together.

"The other big group of plants in the rotation—roots—is mainly for cattle and sheep food. Mangolds, big dark-green roots, are chopped if fed to cattle, though sheep eat them whole. Horses, too, are fond of them. Swedes and turnips are also fed to the stock. Potatoes and sugar-beet are cash crops though they provide a lot of food for stock too. Kale is grown for feeding. Cattle are particularly fond of the marrow-stem which is cut by the cowman in late autumn and winter.

"Root crops are all sown in spring. Mangolds, beet, swedes and turnips need a very fine tilth and are sown with a steerage drill that puts the seed in very accurately, the distance between the rows being between 18 and 20 inches. Kale is similarly sown but 24 to 30 inches apart. As soon as the plants have made a good start, hoeing commences. Rows of potatoes are kept 27 inches apart and are usually planted by hand in furrows. The sets are put about 12 inches apart. The ridges are then split over them and again the land is kept free of weeds by hoeing. 'Seeds' or grass *ley* is the other crop in our rotation. The seeds are sown by drill, usually in a crop of oats or barley which acts as a nurse, protecting the tiny seedlings during the first year. The seeds grow into a thick mat under their cover. When the nurse crop is cut the young grasses and clovers are not damaged."

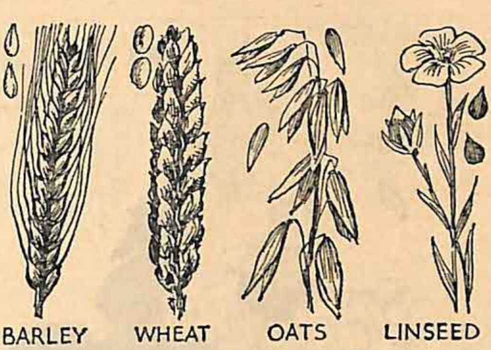

Fig. 65. Grains commonly grown on English farms.

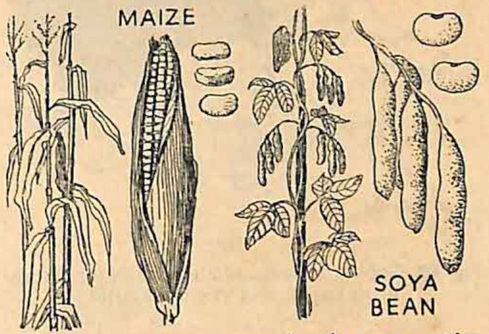

Fig. 66. Two recently introduced crops—maize from North America, soya bean from China.

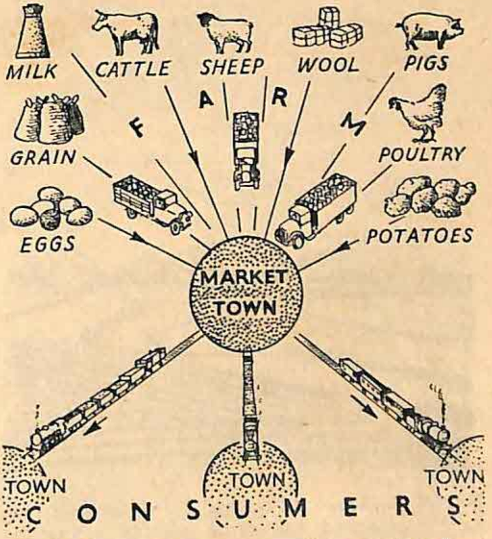

Fig. 67. The market town receives produce from the farm and distributes it to the consumers in other towns.

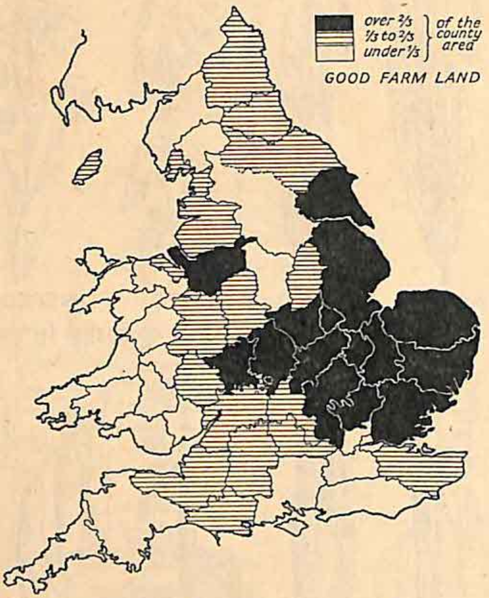

Fig. 68. Good farm land, i.e. land suitable for ploughing in English and Welsh counties.

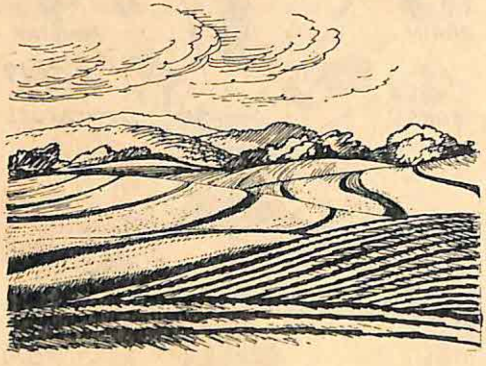

Fig. 69. Contour ploughing. The furrows are ploughed and crops planted across the slope of the land so as to prevent rain forming channels and carrying away the top soil.

**1** Climate, soil and height of land cause farmers in different districts to specialise in different kinds of farming. Why does Kent specialise in fruit, Leicestershire in beef cattle, Devon in dairying, the Pennine hills in sheep raising?

**2** Ordinary cultivated farm land is divided into grassland and arable land. Fig. 68 shows how in each county this land is divided between the two types. Name the counties that fall in each class. To which group does your own county belong? In which counties would you expect (*a*) wheat growing, (*b*) dairying, to be especially important? Why?

**3** In judging ploughing in this country straight furrows are always looked for. Fig. 69 shows some land newly ploughed for a corn crop in a part of the United States. Suggest a reason for the furrows being curved. In ploughing a sloping field would you run the furrows up and down the slope or across it? Why?

**4** Land is sometimes ploughed and sown with a "seeds" mixture for either a short or a long "ley", i.e. to grow a grass crop for one or more seasons. At the end of the period the ground is again ploughed for a crop of spring corn. The seeds nearly always include Italian Rye grass and often Timothy grass and Red clover or Wild White clover. (See Fig. 51.)

Why is clover included? Red clover grows quickly in the first year but does not usually last into the second. Yet it is often used in seeding both short and long leys. Why in a short ley and why in a long ley?

Timothy develops rather slowly at first, but gives very good summer pasture. Rye grass grows quickly and is the best spring and autumn grazing. Both will grow in a mild winter. Why would you expect to find Timothy included only in seeds for a long ley but Rye grass in those for both short and long leys?

**5** Only young grass is tasty and feeding for cattle. Cocksfoot is a common quick-growing grass. What did a farmer mean when in speaking of this grass, he said, "It will feed two bullocks and starve one"?

**6** If a farmer wants to find his yield of roots per acre he sometimes uses a table like this:

| lb. per yd. | *Yield per acre when distance between rows is:* | | |
|---|---|---|---|
| | 30 inches | 27 inches | 24 inches |
| 1 | 2 tons 12 cwt. | 2 tons 18 cwt. | 3 tons 5 cwt. |
| 2 | 5 tons 4 cwt. | 5 tons 15 cwt. | 6 tons 10 cwt. |
| 5 | 12 tons 19 cwt. | 14 tons 8 cwt. | 16 tons 4 cwt. |
| 10 | — tons — cwt. | — tons — cwt. | — tons — cwt. |

He knows the distance between rows, so he takes up the roots from a few yards of a typical row, weighs them and looks up the weight per acre in the table. Fill in the last line in the table.

**7** The Colorado beetle is an insect which is very destructive to potato crops. It is fairly common in some European countries, but rare in this country. Crops are sprayed to prevent it spreading. The black dots in Fig 70 show the areas sprayed in 1950. Suggest any reasons you can for the choice of these areas. Find out who pays for the work. The *British* Ministry of Agriculture provided the aeroplanes which sprayed the potato crops in Northern *France*. Why should it do so?

**8** Fig. 71 shows waste marshy land covered with rushes. What could be done to improve it?

**9** Plant breeders have selected different *strains* of the same grasses suitable for different purposes. Fig. 72 shows plants of three different strains of Timothy grass. How are they suited to their suggested uses?

**10** Why is it important to maintain the fertility of the soil? Mention some of the chief ways in which it is done.

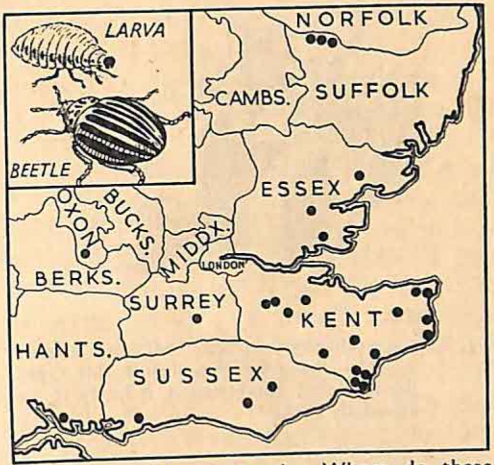

Fig. 70. The Colorado beetle. Where do these breeding groups seem to have come from? (Modified from 'Agriculture', 1951, by permission of the Controller of H.M. Stationery Office)

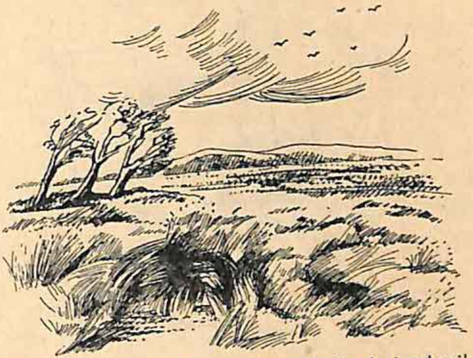

Fig. 71. Coarse, reedy pasture on badly drained soil.

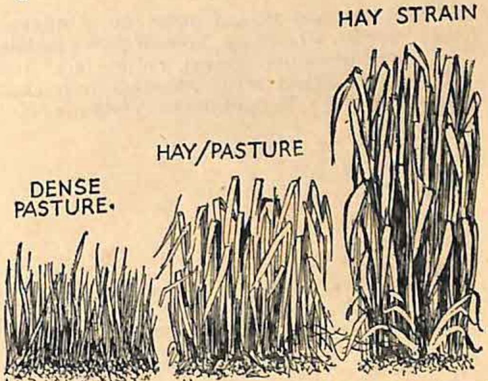

Fig. 72. Three different strains of grass developed by selection from one original type.

# MOBILE MACHINERY

JEFF had been thinking over what Mr. Homer had said about farmers depending on towns and factory workers for their fertilisers. As he rode along on his bicycle to Newstede Farm it occurred to him that there were other ways in which the town helped the country. What about all the machinery on the farm? The new tractor had been made in Coventry and a new plough was expected at the farm. He must find out more about the farm machinery. As he rode into the farmyard he saw his friend George busy overhauling the older tractor.

"Hallo George, how are you getting on?" "Pretty well—I've nearly finished. Only got to connect the plugs and the fuel tap and then we'll get her started up. After that I've got to check over the rest of the tackle here and bring the new three-furrow plough in from the garage where it was put when delivered." Jeff was sorry the job was so nearly finished for he was very interested in the tractor and had already learned to drive it. Several times he had been to fetch a load of clover on the trailer and had driven all the way there and back along the bumpy cart-track without trouble, though he had grazed the gate-post with the back of the trailer the first time he brought the load home. George turned on the petrol and after turning the starting handle a few times the engine fired. When it had warmed up he turned it over to paraffin. Jeff jumped up on the back and they fetched the new plough.

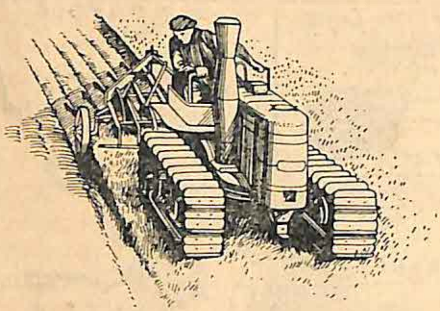

Fig. 73. Caterpillar-type tractor plough. Suggest (a) why many farmers dislike this type, (b) for what conditions it is likely to be especially useful?

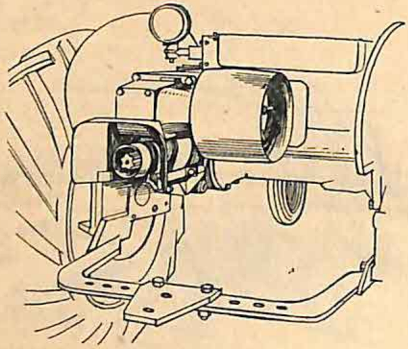

Fig. 74. Power take-off and pulley on a modern tractor. The power take-off drives mobile machinery (e.g. mower and binder). The pulley drives static machines (e.g. chaff cutter). Why does the lamp face the rear?

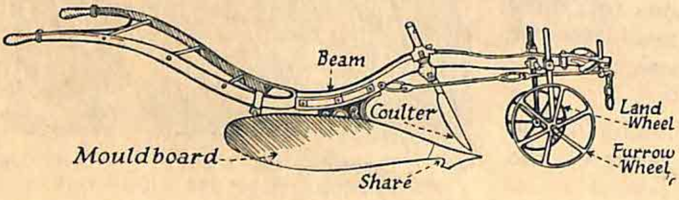

Fig. 75. A modern plough. Explain the purpose of each of the parts named in the diagram.
(By permission of the B.B.C.)

"Looks good," remarked George, as they removed the wrappings and admired the shining but grease-covered mouldboards. "Do you understand how it works?" "Not very well." "Right, then I'll tell you as we clean it. In front here we have the coulter. It cuts through the soil vertically. Then we have the main body of the plough. The tip or point is called the share and it cuts the ground horizontally. It gets a good deal of wear so it is easily renewed by unfastening these bolts. That big curved piece of steel is the mouldboard. It turns the soil over. Different shaped mouldboards turn the soil differently. A long gentle curve turns the soil slowly and gives an unbroken furrow strip, but a short sharp curve turns the soil quickly and breaks the slice up.

"Over there you can see some other tools called harrows used for stirring the soil. They're really only very big rakes. You've seen me use them to break the ploughed soil into a fine tilth and to cover up the seed, so you already know something about them.

"Near the harrows are the cultivators. The one with what looks like huge hooks, is a spring-tined cultivator and the other that looks like a lot of large metal saucers is a disc cultivator. The Cambridge roller standing at the back is used for breaking up hard lumps and also for pressing the ground if it is too loose for the proper germination of seeds.

"You already know a bit about the drill, but you may not have noticed that it can be adjusted for many different sizes of seeds and to give different spacings between the rows. It is a combine drill, that is, it can sow powdered fertiliser at the same time as the seed. On the other side, here is what looks like a plough with a double mouldboard. That is just what it is. It's called a ridger and is used for making the ridges when planting potatoes and afterwards for covering them up. The potato digger next to it is one of the elevator type. You saw it at work when you first came to the farm.

"You'll notice that there is one big difference between the other things we have looked at and the last one," said George. "Except for the tractor—which is just a source of power—all the other things are used for working the soil in some way. The potato lifter is a harvesting implement. Let's go round to the other shed and look at some others."

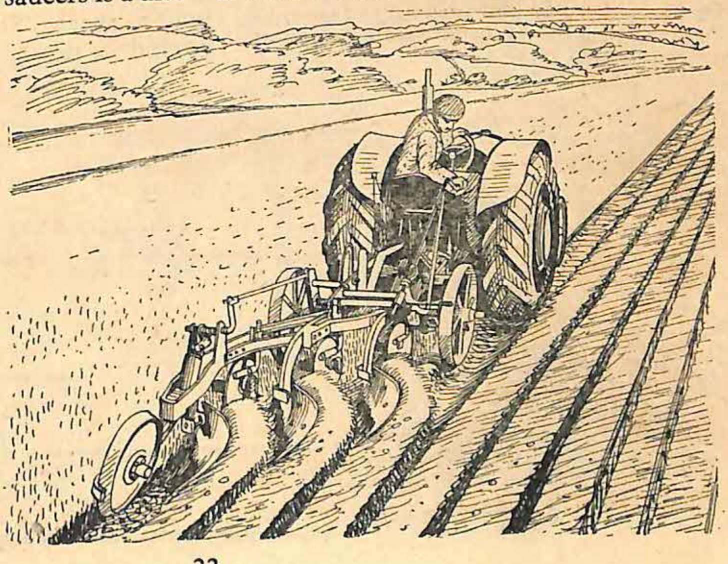

Fig. 76. A three-furrow plough drawn by a tractor. Find the mouldboards and explain what they are doing. The ploughman can alter the depth of the furrow without leaving his seat.

## HARVESTING MACHINERY

"HERE is the mowing machine. It is fastened behind the tractor and is worked by the tractor engine. This long bar with triangular teeth which reaches out from the side of the machine is the cutter-bar. When it is in use a long knife slides very rapidly backwards and forwards under the bar and cuts off the grass or straw close to the ground. There's a set of knives hanging on the wall there. Each is just a flat bar with triangular blades riveted to it. The edges of the blades must be kept very sharp. Now you can see why the farmer does not like stupid people who throw stones or old tins into his hayfield. This part of the machine between the wheels is a gear box which allows the tractor engine to drive the knife to and fro in the cutter. That board at the outer end of the bar turns over the cut grass away from the standing grass.

"The binder is more complicated. Here is a cutter just like that on the mower. In front of it are the wooden sweeps that bend the corn against the cutter. Behind it is this canvas belt on which the cut corn falls. The belt carries the corn up behind the worker to the deck where those metal fingers gather it into a sheaf. The knotter passes a string around it, ties it, and cuts it off and throws

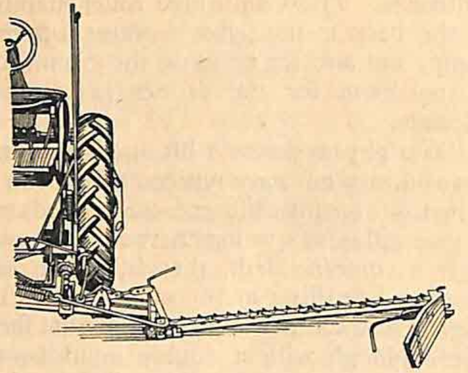

Fig. 77. The cutter-bar of a mowing machine attached to the tractor.

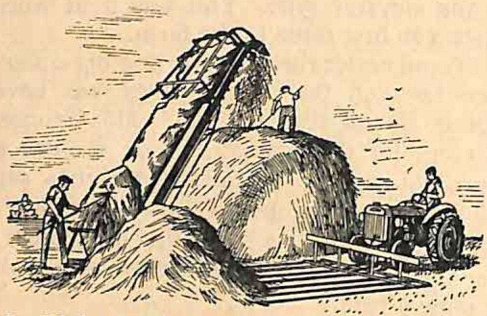

Fig. 78. Stacking hay with an elevator. The hay has been gathered and carried by a tractor-pushed sweep.

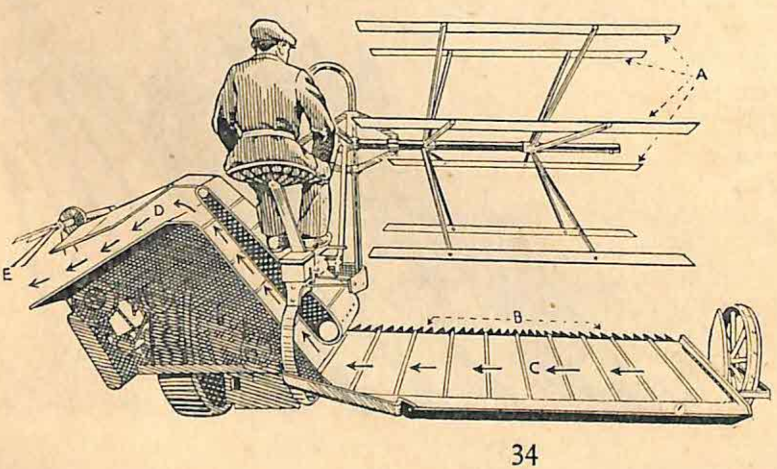

Fig. 79. A binder. The arms or sweeps at A press the growing crop over the cutter B. The cut corn falls on the wide, moving canvas belt C which carries it forward. D marks the track of the corn to the tying mechanism E from which the sheaves fall to the ground.

*(By permission of the B.B.C.)*

the tied sheaf on the ground. The workers gather the sheaves and pile them in stooks to dry.

"That big tarpaulin covers the threshing machine or 'drum' as we usually call it. It separates the grain from the straw. If we need corn at once we take the machine into the harvest field and thresh there but usually the drum is taken to the stacks and barns during winter. The corn is fed in at the top. It is driven over a curved steel grid, called the concave, by a fluted drum which beats the corn out of the heads. All the rest of the things inside the huge wooden casing are designed to clean the corn from the husk, weed seeds, dirt and straw. The straw comes out at one end and is built into a stack. The clean corn is carried on elevators to the other end. There it passes through a rotating sieve which grades it according to size, and it is then fed into sacks.

"The binder and the drum are often met with today as one implement called a combine-harvester which cuts and threshes as it goes round the field. It saves a great deal of time and labour.

"Another implement that comes into the harvesting of both grass and corn is the elevator. This is used for lifting the hay or corn up into the barn or on to the ricks. It consists of a long wooden trough which can be raised from nearly flat to nearly vertical by wire ropes passing over two uprights. The trough has a lot of bars fitted with upright fingers and carried on endless chains. These are driven by a small petrol or paraffin engine and so the crop is carried to the top over which it falls on to the ricks. A machine can be got that combines the mower and elevator so that it cuts and lifts a crop into a cart or trailer following behind. It is much used for cutting short, young grass for drying, and for silage crops."

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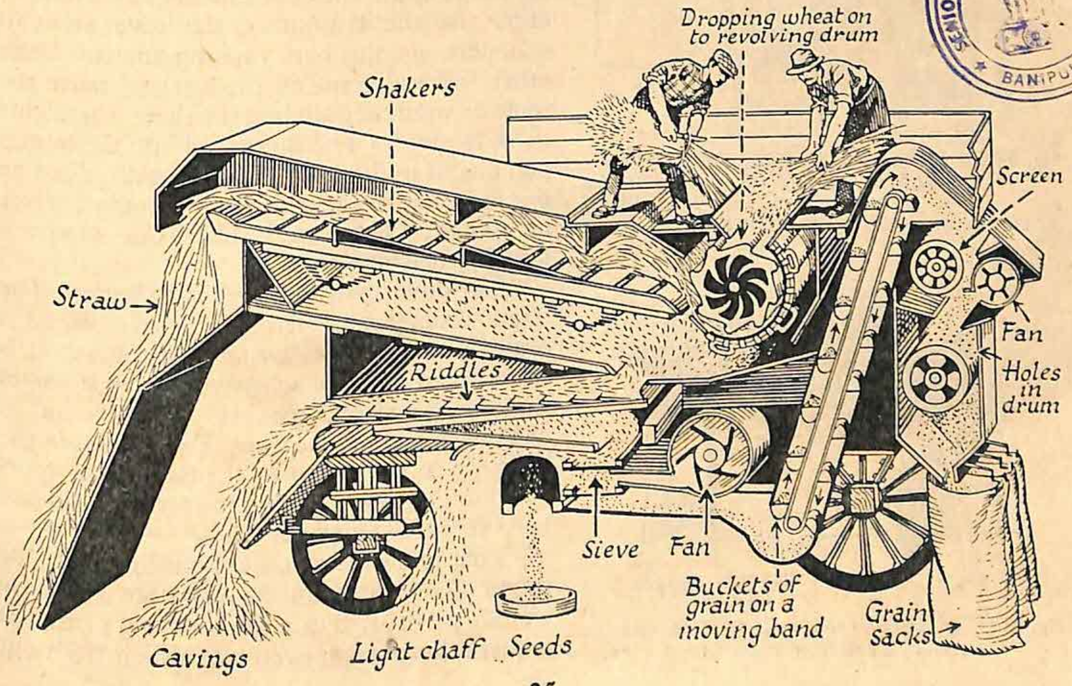
Fig. 80. How a threshing machine separates the grain from the straw and chaff.
(By permission of the B.B.C.)



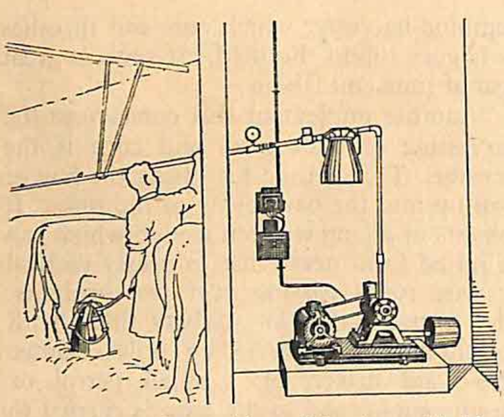


Fig. 81. Power for machine milking is provided by a small electric motor which drives the air pump.

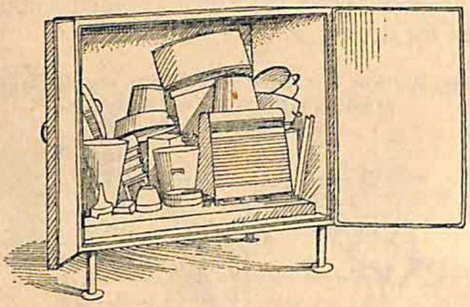


Fig. 82. Sterilising chest in dairy. All utensils are washed carefully and then placed in the chest. Steam is forced into this to kill any germs that may remain on them.

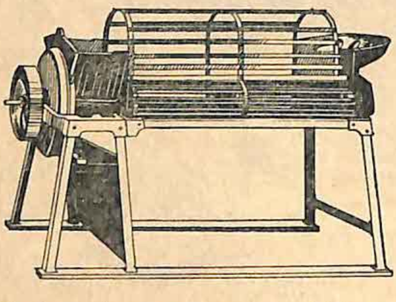


Fig. 83. Root cleaner and pulper. This may be driven by a belt from the tractor engine.

## MORE MACHINERY

GEORGE went off one afternoon to do a job in the granary. The tractor was standing outside. As soon as he had got it running George connected the tractor pulley by an endless canvas belt to the mill. When he turned the lever on the tractor so that the pulley began to turn, the mill began to work. Into the hopper over the mill he poured some oats. The high-pitched note of the machine dropped and changed to a grinding, crunching noise as the mill ground the hard grains to meal. This poured out into the sack that he had hooked round the delivery pipe.

"We grind wheat, barley, peas and beans as well as oats," George explained to Jeff. "The cattle like them better that way and they are more easily digested. For the same reason we also cut up the roots with that cleaner and pulper you see over there. It is driven by the small portable paraffin engine we use for driving the elevator in the hayfield. The roots are put in at the open end and fall into a kind of cage. At the bottom of the cage are two cylinders of long bars rotating towards each other. These scrape off the dirt and move the roots on until they fall into the slicer which cuts them to pieces. The shreds fall into the bushel pan placed underneath. Different discs can be put in so that the machine can become a grater or pulper. They work like your mother's mincing machine.

"The other machine there is a chaffer. The straw, usually oat, is fed into the trough and is drawn into the cutter by toothed rollers. It is broken and cut into short lengths as it passes through a narrow opening. Quite a lot of chaffing is done at one time. You have seen the big heap in the corner of the barn. The roots are done in smaller quanties for they do not keep very well when cut up.

"That is all the stationary machinery to be found on this farm, but on very large farms you would, perhaps, find a grass-drying plant. It is just a long warm oven into which fresh-cut young grass is put at one end. It passes slowly through until it comes out dried at the other end. It is really a way of making hay but it can be used in any kind of weather. It is specially useful when we have a wet summer or one without much sunshine. A grain drier might also be found on a farm that grew much wheat and used a combine-harvester to cut it.

"A circular saw is a very common and useful machine, but it needs to be handled with great care. With it the farmer can cut up timber to make fencing or for repairs to buildings and carts. Like many of the other machines it can be driven by a belt from the tractor pulley. That's what we mean when we say the tractor is our main source of power. We can use it to draw ploughs and harrows, mowers and combines and to drive machines that do much of the work farm labourers used to have to do by hand."

"I was thinking about machinery as I came along," said Jeff, "but I did not realise how many different machines are used on an up-to-date farm. I suppose it's only in the last few years though that machines have come to be used?"

"Well, that's not quite true," answered George. "Ploughs have been used for centuries and mowing machines for a hundred years. It's really the motor that's made the difference. The tractor can do nearly everything the horse did and many jobs it couldn't do. It can do much heavier tasks and work far more quickly, and so nowadays machines have been designed to work with it. Many machines were first used on the prairie farms in America where labour was scarce. Now more machinery is used on British farms than on those in any other country. Our manufacturers make farm machinery that is used all over the world.

"Most English farm machinery used to be made in our eastern counties but nowadays the motor firms who build the tractors make the other machines too."

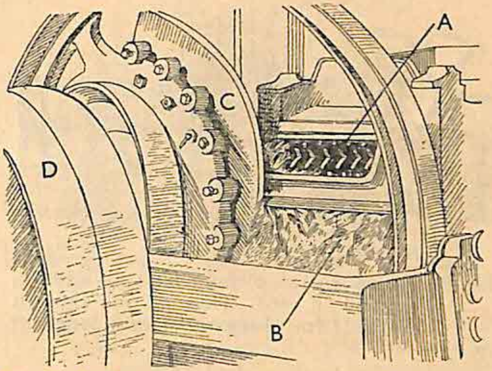


Fig. 84. Chaff cutter. Straw from the hopper is fed by the teeth A, through the opening at B. It is cut into short lengths by the blade C.

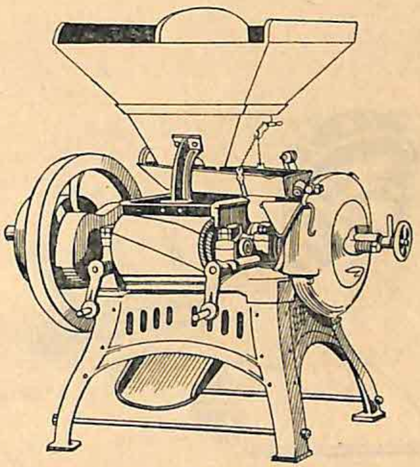


Fig. 85. Grinding mill. This crushes peas, beans and grain into a coarse meal.

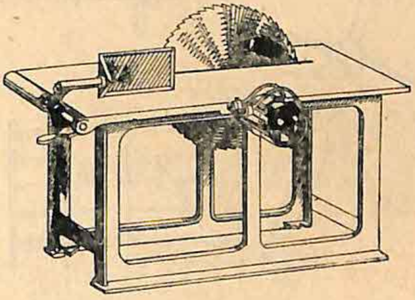


Fig. 86. The farmer finds many uses for a simple circular saw, e.g. cutting firewood or fencing-rails and posts.

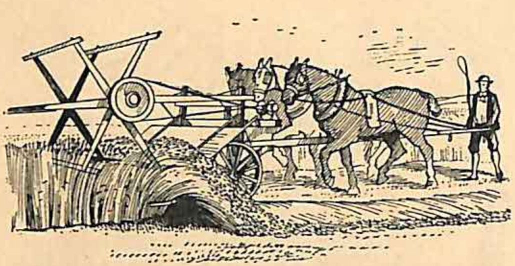


Fig. 87. An early type of farm machine made in England in 1861. How do you think it worked? For what purpose was it designed?

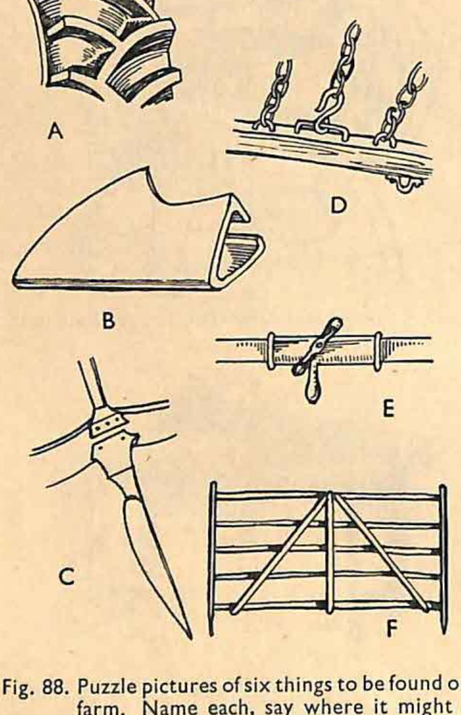


Fig. 88. Puzzle pictures of six things to be found on a farm. Name each, say where it might be found and for what it is used.

**1** This table gives the rates of ploughing different kinds of land with a tractor-drawn plough cutting 10-inch furrows.

*Average land:* 0·2 acres per hour per furrow.
4·8 acres per 8-hour day with a three-furrow plough.
*Light land:* 0·25 acres per hour per furrow.
*Heavy land:* 0·15 acres per hour per furrow.

What is meant by *light* land and *heavy* land? What would be the rates of working for a two-furrow plough?

**2** Get copies of some of the weekly papers published for farmers, and from them make lists of cow, sheep and pig breeds and of well-known farm tractors.

**3** The farmer now employs more and more machinery and fewer horses than formerly. What difference has this made in (*a*) the sort of workmen he employs, (*b*) the number of labourers employed, (*c*) the use to which he puts his fields, (*d*) the amount of money a young man needs before he can begin farming on his own account?

**4** The motor cart shown in Fig. 89 can carry a 30-cwt. load and travel at 12 m.p.h. on a hard road. It could be controlled by a man walking beside it. What advantages and what disadvantages has it as compared with a horse and cart?

**5** When drilling seed, a harrow of the same width as the drill is usually drawn behind it. The chain pulling the harrow is fastened to a plate beneath the walking board by means of a roller as shown in Fig. 90. This can turn round and round without twisting the chain and can also roll along the plate. This is called a *swing hitch.* What happens to it when the drill turns at the end of the field? Why is a swing hitch necessary when one machine or vehicle is towed behind another?

**6** The implement shown in Fig. 91 is a rotary cultivator. The blades are driven round by the tractor as it moves across the field. What effect will it have on the soil? For what purpose could it be used?

**7** Some parts of Britain which are of little value as farm lands have been planted with trees.

Find where some of these lands are and why they were so used.

What harvest will be gathered from them? In what ways do trees differ from ordinary farm crops?

**8** Many products of the farm are sent away to factories, e.g. milk, sugar-beet, wool. Make as full a list as you can of these products, using separate columns for those which are foods and those which are not.

**9** The miller and the farmer have always helped each other. What does each provide for the other's use?

**10** Stir a spoonful of garden soil in a glass jar of water and allow it to stand for two minutes. You will usually find (*a*) a little brownish stuff floats on the surface; (*b*) the water remains muddy; (*c*) part of the soil settles on the bottom of the jar.

Quickly skim off the floating stuff into a saucer and dry it in a warm place. Pour the muddy water into a clean jar and put it aside for a few hours. Wash or scrape out the material from the bottom of the jar. You will thus have separated the soil into three parts which you can now examine: (*a*) is *humus*, decayed plant remains; (*b*) fine *clay*; (*c*) grit and *sand*.

Repeat the process with (*a*) a very light soil; (*b*) a heavy soil. Compare the amounts of sand and clay in the two cases.

Does a clay soil or a sandy soil (*a*) drain more easily; (*b*) withstand drought better; (*c*) work more easily?

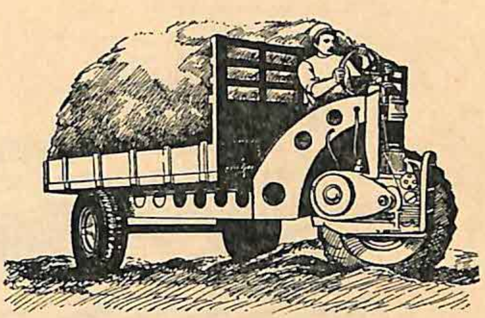


Fig. 89. A motor cart used for carrying moderate loads. The driver can walk beside it as with a horse cart.

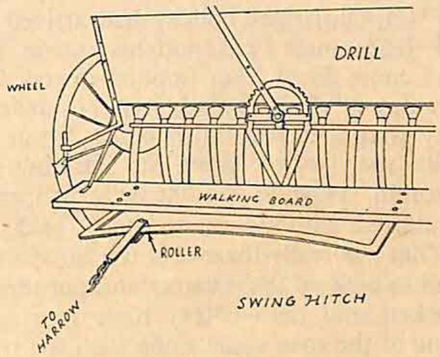


Fig. 90. A swing hitch behind a seed drill.

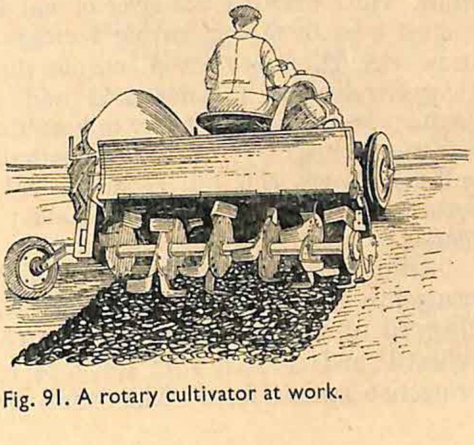


Fig. 91. A rotary cultivator at work.

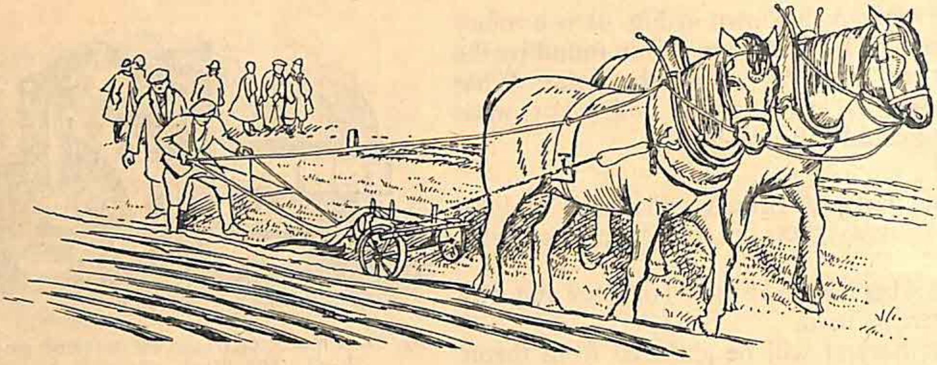


Fig. 92. The ploughing match. Straight furrows of even depth, and smoothly turned-over soil completely burying the old growth of grass and weeds are what the judges look for.

# ROUND THE YEAR

## (i) AUTUMN WORK

THE Christmas holiday had arrived and Jeff's uncle Fred, and his cousin Ken, had come down from London to stay for a few days. "Well, my lad," said his uncle one day after they had finished tea, "your dad tells me you've taken up farming this autumn. How do you like it?" "It's grand! I started with potato-picking," said Jeff. "That was really the end of the harvest. We had to pick up the potatoes and put them in baskets and then empty these into sacks. One of the men came along with the trailer and picked up the sacks. Near the gate they were emptied on to a long, narrow pile of straw. When all the potatoes were piled there they covered the heap with a lot more straw. Next week a thick layer of soil was heaped over them but leaving bunches of straw sticking out at the top here and there. George called it a clamp and said the potatoes were stored that way to keep them safe from damage by frost. Next month they will take some out, put them through a sorter, and take all but the smallest to market in hundredweight sacks.

"After potato-picking I watched the mangolds being pulled. The tops were chopped off and small heaps of the roots collected and covered with the tops as a protection against frost. When the soil on the mangolds had dried the heaps were gathered up. I drove the old mare in the rubber-tyred cart to collect them one Saturday morning. We had to put the mangolds in the cart very carefully, so that the skins were not damaged. If they are, the roots go bad in the clamp. We made the mangold clamp near the farm so that it is handy when they are to be chopped up for the cattle.

"Of course, I learnt something about ploughing too." "That's pretty easy. You just go up and down the field with a tractor," said Ken. "You'd better try it if you think that's all there is in it," retorted Jeff. "I thought it looked easy until I found that the plough only turned the soil over to the right and that it was jolly difficult to turn the tractor and plough round sharply on the headland. The first thing George did was to set his two-furrow plough so that only one share was cutting the ground about three inches deep. With the plough set like this he marked off the headlands and sidelands all round the field. Then he cut some sticks out of the hedge and used them to mark out the ground inside his first marks. He stepped out 22 yards along one side and put in a stick. He called each 22-yard strip a 'land'.

In the centre of each land he set up his ridges by turning two shallow slices against each other. This done he reset his plough to cut both furrows 7 inches deep and then ploughed round and round until each land was finished with an open furrow. This is where the two furrow slices have been turned away from each other between the lands. That done he ploughed round the headlands and sidelands so that the whole field had been ploughed.

"Then I helped with sowing the winter corn, both wheat and oats, with a combine drill. It has a double hopper; the seed is in one and the fertiliser in the other. Wide headlands are left when you are sowing. The tractor has to turn on these so that the inside wheel of the drill goes back up the field on its own wheel mark. The coulters next to the drill wheels are set so that they are half a spacing from the wheel and so all the rows are then equally spaced. The headlands are drilled after the main part is finished. A set of harrows fastened behind the drill covers the seed over.

"Another job I enjoyed watching and helping with, was thatching. This was done by a fellow from the village named Wilson. He came to thatch some corn stacks near the farm. He threw several buckets of water over a heap of wheat straw. Then he pulled out handfuls of long straight straws and made them into bundles called *yelms*. These he used as a slater uses tiles. He put a long ladder against the stack near one end, and with a bundle of sticks, some string, a kind of comb, and some straw, he started work at the eaves and worked up to the ridge. He made his yelms overlap and pegged and tied them down securely. When he had covered the whole roof he trimmed it off neatly at the edges and the job was finished and the stack weather-proof."

"Did you do any other things?" asked Ken.

"All the usual day-after-day and all-the-year-round jobs such as feeding the animals and cleaning up. There is always something to be done on a farm."

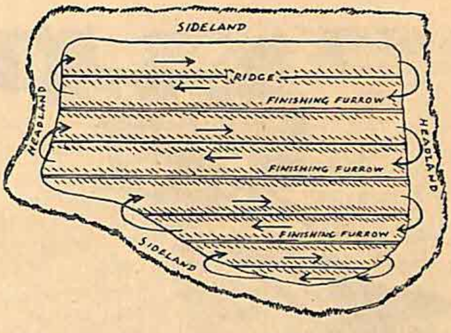


Fig. 93. How the ploughing of a field is planned.

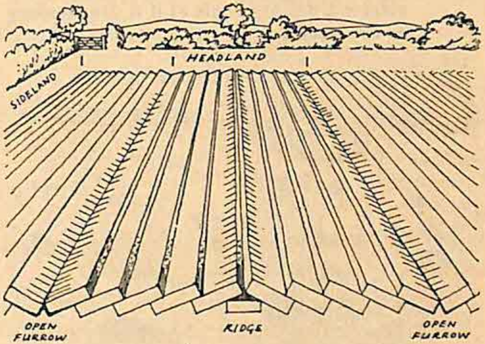


Fig. 94. How "ridge and furrow" are formed by ploughing the "lands". They help the surface drainage.

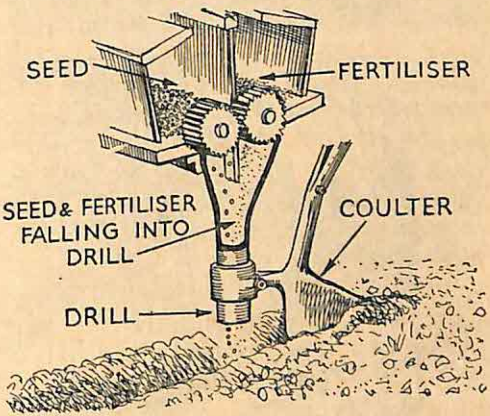


Fig. 95. Part of a combine drill. The rollers in the seed and fertiliser boxes can be set to deliver these at different rates down the tube into the drill opened by the coulter.

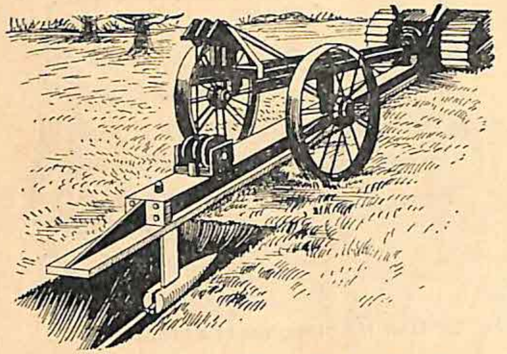


Fig. 96. Mole draining. The shell-shaped steel cutter pierces a drainage hole as it is drawn along by the tractor.

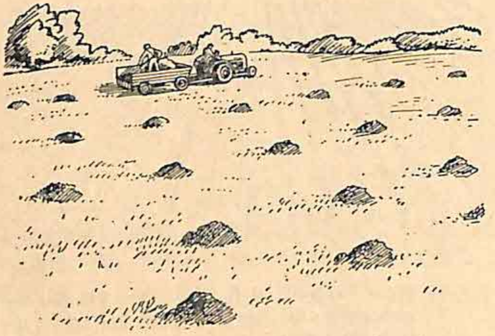


Fig. 97. Muck-spreading. On up-to-date farms a machine spreader carries and spreads the manure.

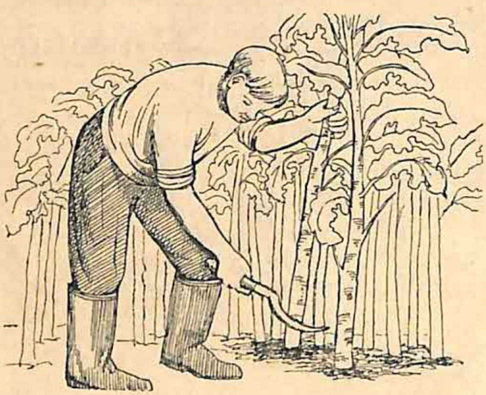


Fig. 98. Cutting marrow-stemmed kale. The leaves and soft juicy stems give good winter fodder for cattle.

## (ii) WINTER WORK

THERE was a cold wind and a frosty nip in the air as Jeff jumped on his bike one January morning for his usual trip to Newstede Farm. As he turned into the farm he saw one of the County Agricultural Committee's crawler tractors going through the top gate into Oatfield. Jeff put his bike away and followed the tractor. When he got into Oatfield he saw that the ditches had been cleaned out and a cutting made on the field side every few yards. In the first of these he saw the driver had dropped a tool shaped rather like a rifle bullet, but nearly 2 feet long. It was fastened to a vertical steel bar carried by a two-wheeled steel frame. Mr. Homer was standing near so he asked him what it was.

"It's a mole drainer. Drawn through the soil at a depth of 18 inches it makes a continuous hole into which water drains and runs off into the ditches. You can't grow crops in waterlogged soil, because the water clogs the roots and prevents them growing properly. When the new drain is cut we shall put a few tiles from the end of the drain to the ditch—those earthenware pipes that are piled up over there by the hedge. When I take a walk round after a heavy shower I look in the ditches to see if water is running out of the pipes. I've noticed that none has run out of those in this field for some time, and as it's nearly twenty years since it was drained you can see it's time it was dealt with. Cleaning out the ditches has to be done regularly so that the pipe outlets do not get stopped up by weeds and earth.

"Winter, when we can't do many jobs on the land, is the time when things like draining and ditching can be carried out. Hedging is another job for cold weather. Wilson is laying the hedge round the Park so we'll stroll over and see how he's getting on."

They found Wilson at work, wearing thick leather gloves. He was using a hedging hook in his right hand. Instead of just chopping down the whole of a bush he selected some of its branches and nicked them, that is, cut them nearly through with the hook. They then bent down easily as he wove them into the hedge to form a strong, growing fence. Here and there he put in a stake to strengthen weak spots and hold springy growth in place. "That's not how you cut your privet hedge at home I expect, but this hedge has to be strong enough to prevent stock breaking through," he explained. "When a hedge is well shaped, broad at the base and narrow at the top, and close-growing, it will only need trimming with a light hook to keep it in good condition for fifteen or twenty years. Nowadays I see they are using machines to do that job; things with a long cutter just like that on the mower. It'll be a long time before anybody makes a machine that can lay a good hedge, though."

In the next field Jeff noticed a large heap of manure and asked when it was to be used. "Very soon now. If it's dry and frosty next week when you come, you can give us a hand in muck-spreading," was the reply. The weather did turn frosty and Jeff found when he arrived that the heap was being carted all over the field. The manure was dragged out from the carts into small heaps made in lines across the field. These were then spread out evenly with forks ready to be ploughed in later. "Why did you keep the job for frosty weather?" asked Jeff. "Is it because it's a warm job and there aren't many other jobs you can do, anyway?" "That's partly right, but there's a much more important reason on our sort of land—the ground is hard now so that the carts can drive over it without either sinking in or packing the soil close."

Just then the cowman came by with the horse and cart and Jeff got in with him. "You're just the lad I wanted," said Joe. "You can come and help to get some kale for the cattle." When they reached the field they cut a load of kale and took it to Little Acres and threw it to the cows. They ate it eagerly. It was soft and juicy, but the grass in the field was now short and dry.

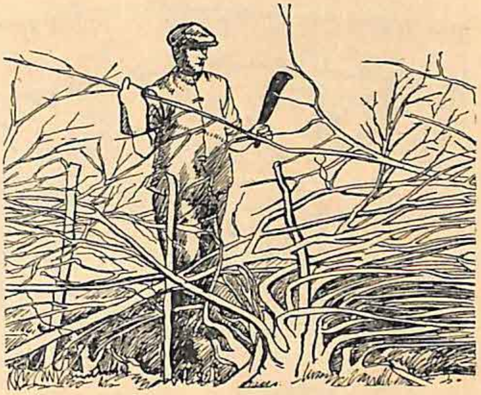


Fig. 99. Hedge trimming. Long shoots are cut out to keep down the height of the hedge and to encourage new growth from the bottom.

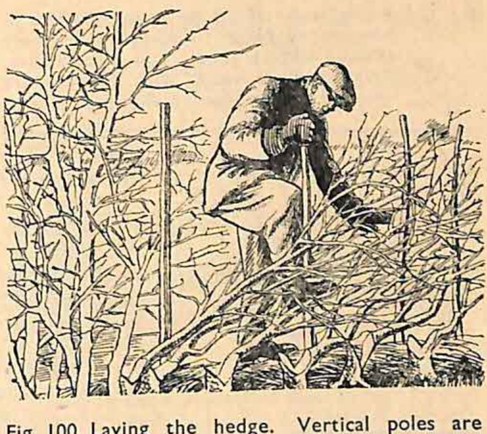


Fig. 100. Laying the hedge. Vertical poles are driven firmly into the ground and the lower-growing shoots woven between.

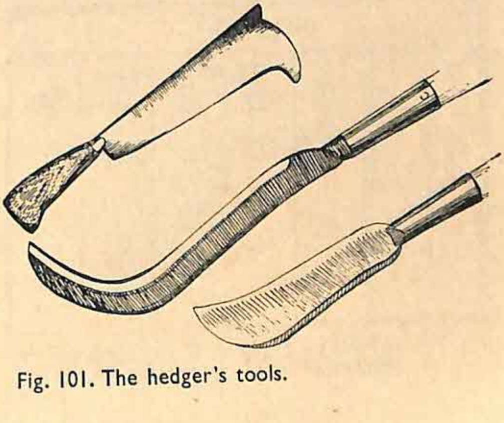


Fig. 101. The hedger's tools.

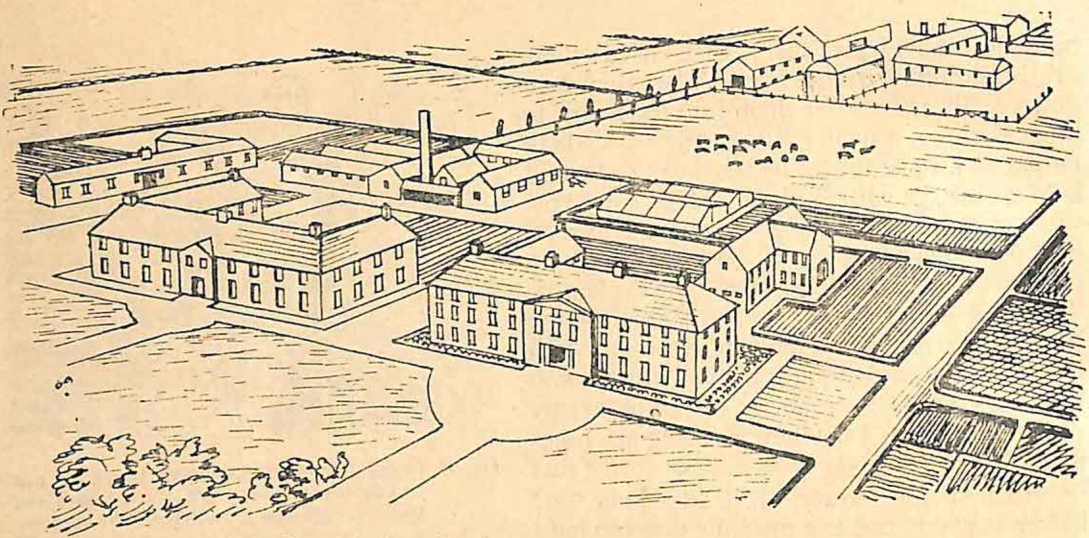


Fig. 102. An agricultural college. Students live in one of the bigger buildings and others contain lecture rooms and laboratories. Practical farm work with animals and crops is carried out on the land behind.

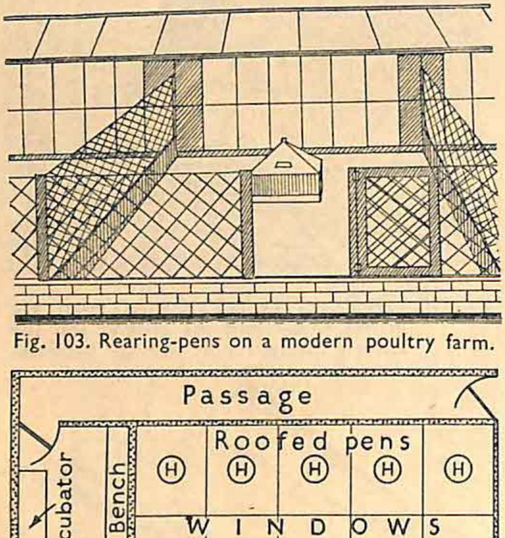


Fig. 103. Rearing-pens on a modern poultry farm.

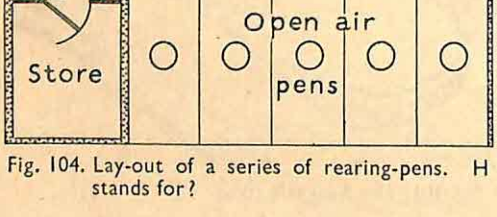


Fig. 104. Lay-out of a series of rearing-pens. H stands for?

### (iii) SPRING ON THE FARM

JEFF'S father leaned back in his chair. "Easter's early this year," he said, "and you will have left school in a fortnight's time. Do you still want to go on the land?" "Yes, dad, and I've found out all about the agricultural scholarships. I have to do a year's work on a farm with an approved farmer, and then I can go to the Agricultural Institute for a year without paying any fees." "That sounds good enough to me. What about Mr. Homer—is he willing to take you?" "I haven't asked him yet, but I think he will." "It's Saturday tomorrow. I'll come down to the farm in the afternoon and we'll have a talk with him."

Next morning Jeff helped Mr. Homer to finish off the sowing of the barley. He met his father when he arrived about three o'clock, and they went into the house to talk to the farmer. Mr. Homer was quite willing to employ Jeff for a year, and said he would do all he could to help him, so the business was soon ended.

"I'm just off to look at the lambs," said Mr. Homer, "perhaps you and Jeff would like to walk round with me?" On their way they stopped at one of the fowl pens in the stackyard. In it were two hundred day-old chicks, and Mr. Homer wanted to see that the lamp in the brooder was neither too high nor too low. "They are all pullets," he told them. "The chicks only arrived this morning, but they're a good laying strain and should start giving us eggs in the autumn."

"Spring is a very busy time on the farm, I suppose?" said Mr. Prior. "It certainly is. As soon as the ground can be worked after the frost and snow, we must get to work on our spring cultivations: ploughing, harrowing, rolling and sowing. In this field we have the wheat that Jeff helped to sow last October. It has grown quite well but the soil crust had been loosened by the frost. It has been harrowed to break up the lumps, and then rolled to make the soil firm round the roots again. That encourages 'tillering' and so the crop will give a heavier yield.

"This next field is being got ready for roots. We spread farmyard manure on it at the rate of 20 tons to the acre. This has been ploughed in and the furrows harrowed. Soon, the far end which I'm keeping for potatoes will be cut up into ridges with the double-breasted plough. The seed potatoes are ready in the barn, stored away from the frost. They arrived from Scotland ten days ago. Early in April they will be dropped in the furrows, and with the same ridging plough we will split the ridges to cover them. When the plants are ready for earthing up, the same plough will be run between the rows again to push up the soil against the young plants.

"Over the hedge here is a ley which a fortnight ago had a top dressing of sulphate of ammonia to quicken the early rye and cocksfoot grasses into growth. The cattle should then be able to graze this field two weeks before the others are ready." When they reached the lambing pens the shepherd told them that he had finished lambing. There had been a good many twins so there would be a fine lot for sale when they had fattened them off.

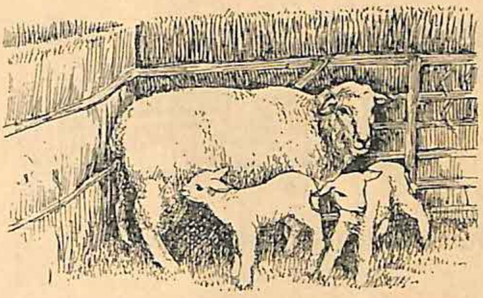


Fig. 105. New-born lambs with their mother. Shelter against cold winds is provided by bales of straw and hurdles.

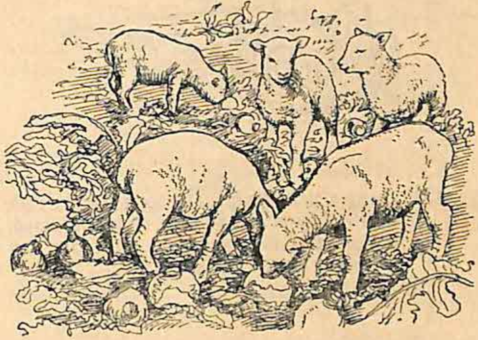


Fig. 106. Lambs feeding on roots.

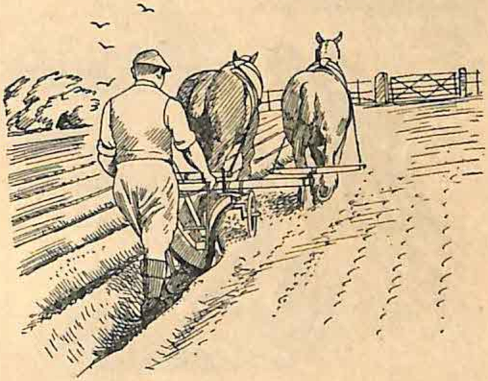


Fig. 107. Using a horse-drawn ridging plough in preparation for potato planting.

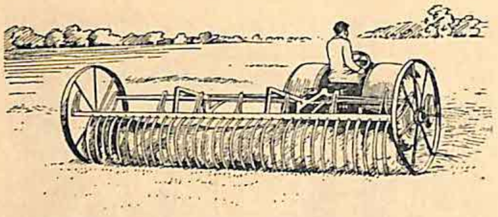


Fig. 108. Gathering hay with a rake.

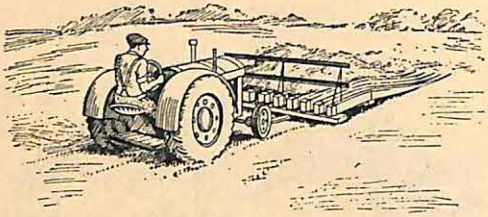


Fig. 109. Using a hay sweep. The long fingers pick up the hay as the tractor drives forward. When it is reversed they slide out and leave the hay in a heap.

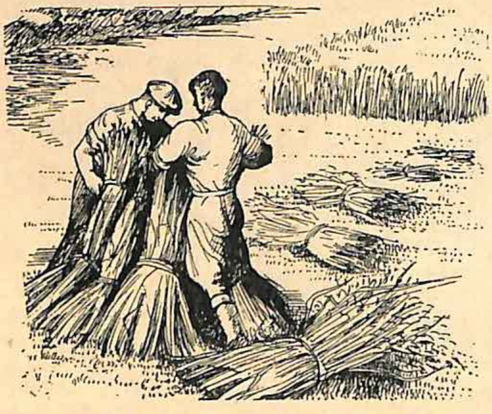


Fig. 110. Building corn sheaves into stooks. Why is this necessary in Britain?

## (iv) SUMMER WORK

WHEN he started work on the farm Jeff found that he was kept very busy, but the healthy, open-air life made him fit and happy. His mother began to wonder if she would ever be able to satisfy his enormous appetite, and his muscles became the envy of all his friends. When the land girl, Shirley Hopkins, or "Hoppy" as everybody called her, sprained her ankle, Jeff had to help in the cowshed and dairy. He soon learned the names of the heavy milking cows, which were quiet and easy to deal with and which were nervous or spiteful. Out in the fields he helped with the sowing of the mangolds, kale and potatoes and, later on, with the hoeing. He had a few days "thistle-dodging". This meant pulling docks and cutting thistles among the corn. He was very much impressed when one field of wheat which seemed to be full of a yellow-flowered weed called charlock was sprayed with weak sulphuric acid. The acid stuck to the broad leaves of the weeds and killed them, but ran off the narrow waxy ones of the corn and left it undamaged. He also helped with the shearing of the sheep.

The summer this year was a good one and Mr. Homer began the hay harvest in June. The grasses were in the leafy stage and most of them not yet in bloom. Mr. Homer was careful not to cut too much at a time, for he knew that the secret of good haymaking was to get it turned as soon as possible. The mower worked well and laid the grass in long lines called swathes. Jeff enjoyed himself on the swathe turner. The weather was just right, not too hot, but sunny and breezy, so the upper side of the swathe was soon dry. Jeff's job was to drive along and turn the swathes so as to expose the underside to the sun and wind. The hay was to be stacked in the field, so a site was prepared in a corner near the gate and the elevator was set up ready. A week after cutting, a sweep was fixed to one of the tractors and the hay was swept up to the foot of the elevator. Jeff, with a pitchfork, loaded the hay into the trough of the elevator. He was surprised at the amount of hay that went into the stack. Only occasionally during the next few weeks was the work of haymaking hindered by showers.

Jeff thought that soon there might be a less busy time, but one evening Mr. Homer took him to look at the winter oats. When they reached the field he told Jeff that the crop was ready for cutting. "How can you tell?" asked the lad. "By the colour. The straw has turned yellow nearly up to the bells, although there is still a greenish tinge about the crop."

Next day George and Jeff took the tractor and binder up to the field. When the two machines were connected together Jeff saw that the tractor would be running next to the hedge and breaking down some of the crop, so he asked George about it. "At one time, before the binder went round, the edges were cut by a man with a scythe and tied up into sheaves by hand by twisting some of the corn round to act as a bond. Nowadays we haven't got the labour to spare nor the men who can use a scythe well, so we just drive over it. When the rest of the field has been cut, we drive round the outside—the opposite way round of course—and cut what we knocked down."

Jeff perched himself on the binder seat and asked what he had got to do. "First, see that the shocks have been tied just above the middle before they are thrown out. This lever alters the point at which they are tied. Then you must raise or lower the sweeps according to the height of the crop. That's done with the lever you've got your left hand on. This other lever above it raises the bed of the machine. If you see a deep gully or anything that may get in the way of the cutter-fingers lift the bed of the machine up. If the knives get clogged up or the canvases stop moving give me a shout to stop." They started off and Jeff found that he had to keep his wits about him to remember all the things he had been told, but he enjoyed the work nevertheless.

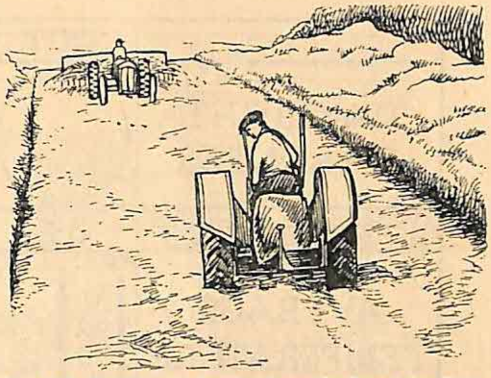


Fig. 111. Freshly cut fodder brought from the field by the rake is being packed closely in the silage pit by driving the tractor across it.

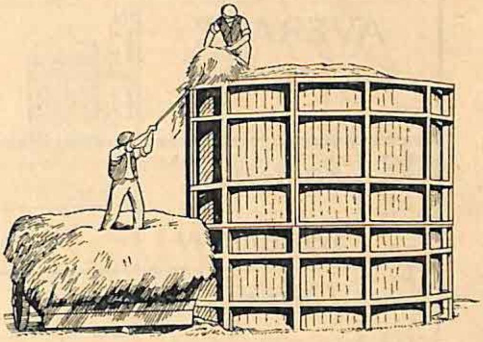


Fig. 112. Filling fodder into a tall wooden silo. Concrete is often used instead of wood.

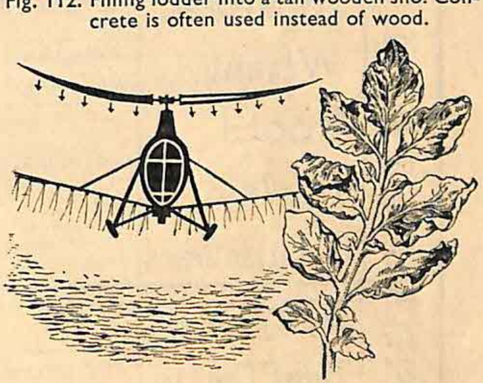
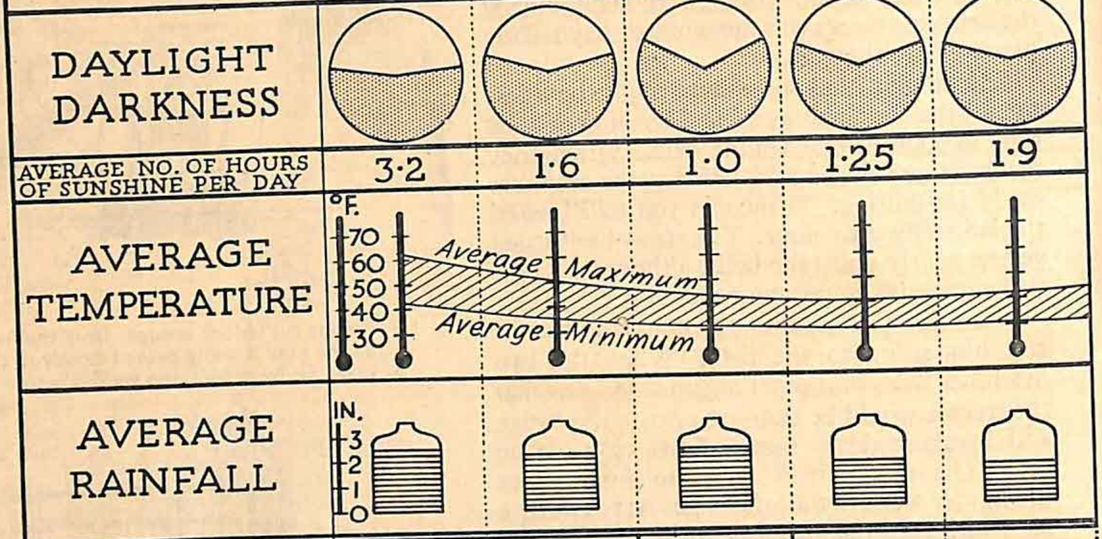
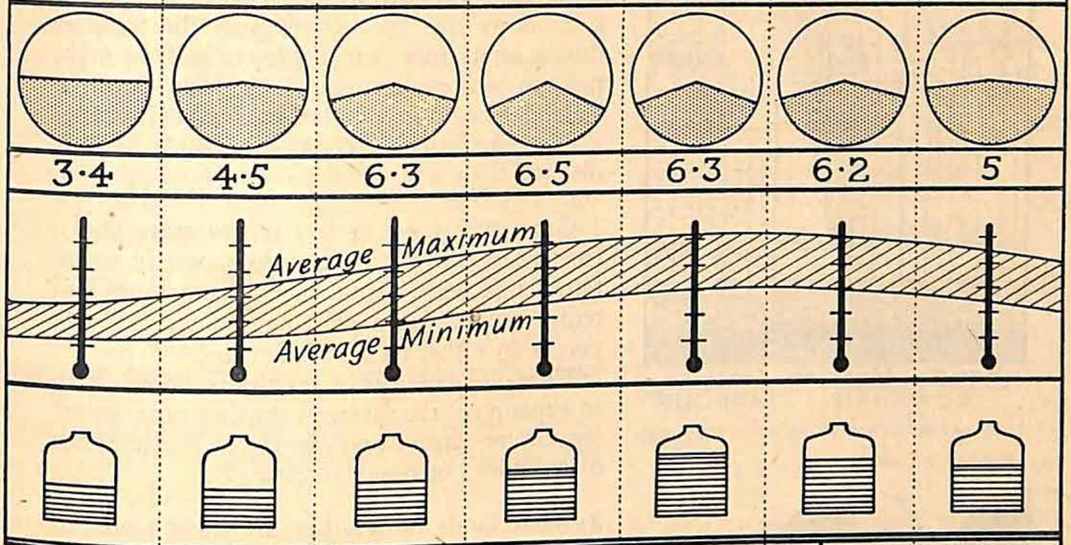


Fig. 113. The curled and brown-coloured leaf of a potato plant shows that it has been attacked by blight. A potato field can be sprayed quickly in this way to prevent blight. The down-draught from the propeller drives the spray forcibly amongst the leaves.



| | | OCT. | NOV. | DEC. | JAN. | FEB. |
|---|---|---|---|---|---|---|
| AVERAGE NO. OF HOURS OF SUNSHINE PER DAY | | 3·2 | 1·6 | 1·0 | 1·25 | 1·9 |
| GRASS | Pasture | | | | Roll after frost, dress with | |
| | Meadow | Dressed with dung | | | | |
| ARABLE | Oats | | | Dunged & ploughed | | |
| | Potatoes | Lifted & clamped | | | | |
| | Wheat | Ploughed and sown | | | | Rolling harrow |
| | Roots | | Lifted and clamped | Dunged | | Ploughed |
| | Barley | | Ploughed | | | |
| | Rotation Grass | | Land cleaned and rolled | | | |
| LIVESTOCK | Dairy Cattle | Largely hand fed | | | | |
| | Beef Cattle | Fat stock sold | Store cattle bought | Fattening in yard | | |
| | Sheep | Mating | Ewes for sale fattened on roots | | Breeding ewes brought in | |
| Other work | | Draining | Fence Repairs | Hedging | Ditching | |
| | | OCT. | NOV. | DEC. | JAN. | FEB. |

## CALENDAR



| MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |
|---|---|---|---|---|---|---|
| 3·4 | 4·5 | 6·3 | 6·5 | 6·3 | 6·2 | 5 |
| harrow, fertiliser | Light grazing | | Heavy grazing | | | Light grazing |
| | Fields shut up | | Hay making | | Grazing | |
| Sown | | | | | Harvested | Ploughed |
| Ploughed | Planted | | Hoed frequently | | Sprayed | |
| and ing | Dressing of Nitrate | | | | Harvested | |
| Harrowed | Sown | | Hoed frequently | | | |
| Harrowed | Sown | | | | | Harvested |
| Fertiliser dressing | | Sown | Haymaking | Lambs on aftermath | | Ploughed |
| Grazing plus concentrates | | | | | | |
| | Young stock bought | | Fattening on pastures | | | |
| Lambing | Fattening | Shearing | Lambs<br>Dipping | | Lamb sales | |
| Milking, weeding, tending poultry and pigs | | | | | | |
| MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. |

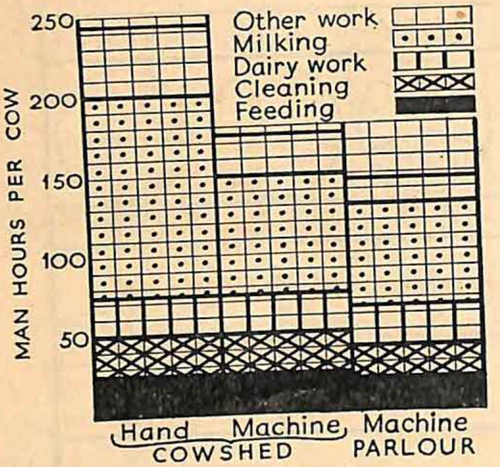


Fig. 114. How a cowman's working hours are spent.

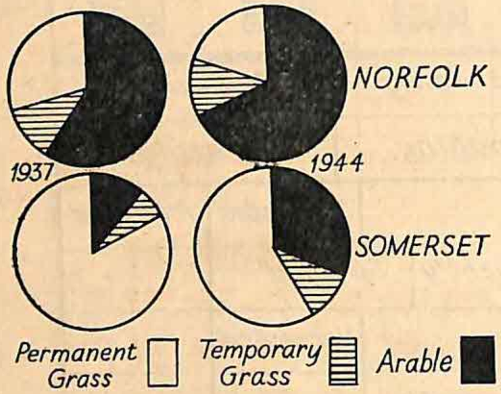


Fig. 115. Land is used differently in different regions and times.

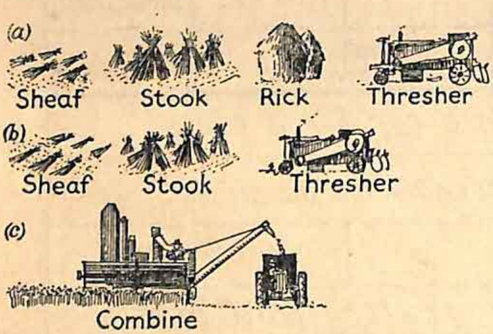


Fig. 116. Three ways of grain harvesting.

**1** The table on pages 48 and 49 is a Farmer's Calendar for a farm near London. The upper half shows the main changes in the weather during an *average* year, the lower half the main tasks to be done in each month. Why does the Calendar begin in October instead of January?

Make a similar calendar for a farm in your district.

**2** Grass will grow at any temperature above freezing point (32° F.) but does best in warm rainy weather. Grain needs sunshine and temperatures above 60° to ripen well. Roots need rain rather than hot sunshine.

How do the weather conditions shown help to explain (*a*) the farmer's grazing programme (see under *Pasture* and *Livestock*); (*b*) the times of grain and of root harvests?

**3** What kinds of weather are most likely to trouble the farmer in (*a*) haymaking; (*b*) wheat and barley growing; (*c*) lambing?

**4** Here is an old rhyme describing a year's work on the farm:

*This is the year's round he must go*
*To make and then to win the seed;*
*In winter to sow and in March to hoe,*
*Michaelmas ploughing, Epiphany sheep;*
*Come June there is the grass to mow,*
*At Lammas all the vill must reap.*

Find the dates of Michaelmas, Epiphany and Lammas, and then draw up a calendar for an old-time farmer's year. Does it differ much from that of a modern English farm?

**5** There are three main ways of organising milking on a farm. The system described in this book might be called the Cow-house system, for the cows are housed and milked in the same building. The milking may be done by hand or machine.

In the Milking Parlour system the cows spend most of their time in the fields or, in bad weather, in sheltered yards. They are gathered in a small yard at milking time and pass, a few at a time, through a special shed for machine milking.

In the third or Milking Bail system the milking shed or bail is movable and is taken to the herd in the field.

Which system seems to you best for (*a*) a small herd on a mixed farm, (*b*) a large herd on a farm specialising in milk production? Give your reasons.

**6** Fig. 114 shows that a cowman spends nearly 250 hours' working time on each cow in one year if hand milking is used, but less for machine milking on the cow-house or parlour systems.

How many man-hours in a year will be needed by a farmer who keeps 26 cows on each of the three methods? How many cowmen will he need for each method?

**7** Farm land is generally divided into arable, temporary grass, permanent grass. Explain the meaning of the three terms.

Fig. 115 shows how the farm land of Norfolk and Somerset was used in 1937 and 1944. Why do the proportions in the two counties differ so much? How and why did they change between 1937 and 1944?

**8** There are three main ways of harvesting grain crops. (*a*) Binder, stooking in field, stacking and threshing in yard; (*b*) Binder, stooking and threshing in field; (*c*) Harvesting with combine.

Study Fig. 116. Which is the best method from the point of view of (*a*) labour employed, (*b*) obtaining biggest yield, (*c*) avoiding spreading weed seeds?

**9** Figs. 117 and 118 show the average number of workers, of cattle and of horses on each one hundred acres of farmland in Great Britain in 1874 and in 1950. It also shows the proportion of (*a*) arable land, (*b*) land given to wheat growing. What have been the main changes in each case? Try to give a reason for each of these.

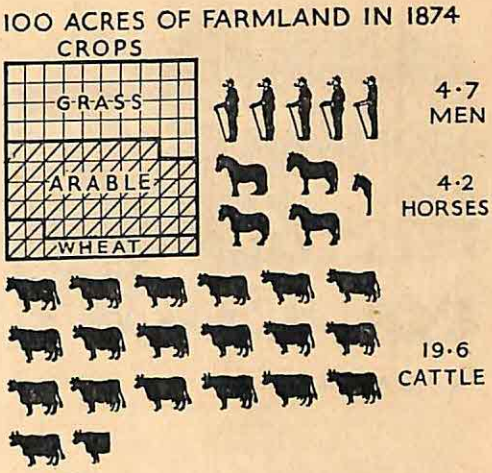


Fig. 117.

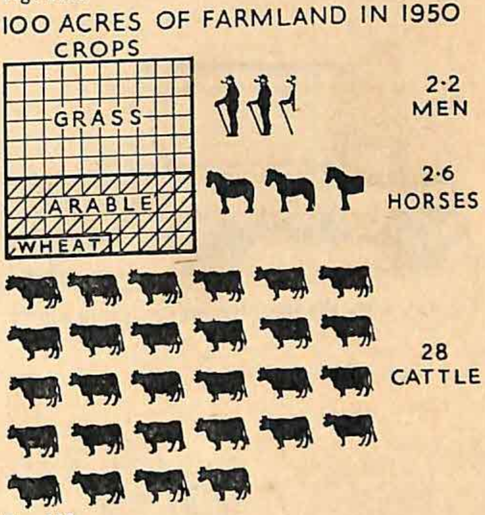


Fig. 118.

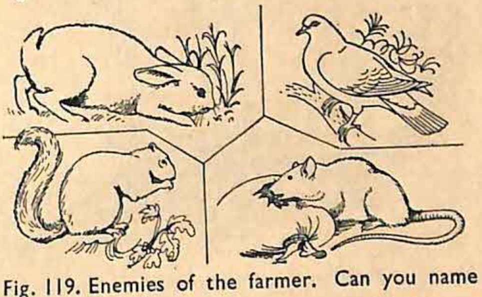


Fig. 119. Enemies of the farmer. Can you name them?

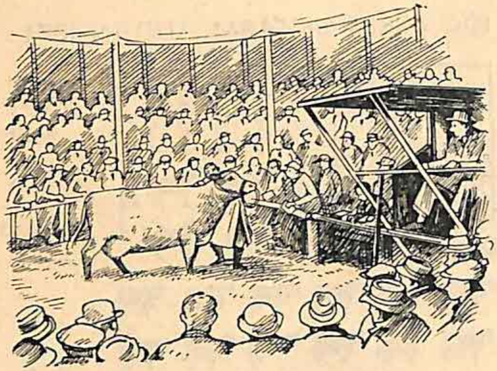


Fig. 120. A cattle auction.

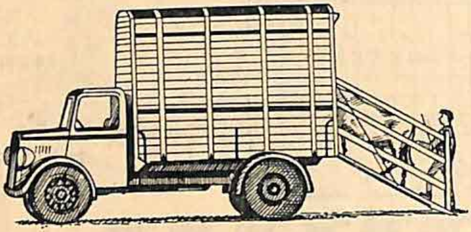


Fig. 121. After the sale—loading cattle into a lorry.

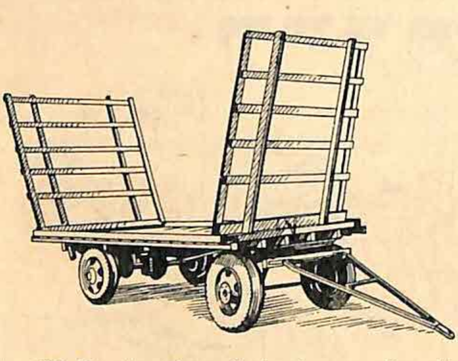


Fig. 122. One item from the implement sale—a hay wagon.

## THE MARKET

"JEFF," called Mrs. Homer, one day, "come and help Mr. Jackson to put these eggs in his van." The job was soon done. "Where are the eggs going?" asked Jeff. "To the packing station. Ten years ago we used to take the eggs up with us when we went to market, though we usually sold them either to the grocer or the butcher. We got much less for them than we do now, but we could sell where we liked. Nowadays, the egg-packing stations collect the eggs and we get a fixed price.

"We used to have trouble, too, sometimes in those days to sell all our milk, and so I used to make butter and cheese and take that with the eggs. Now the Milk Marketing Board collects all the milk and pays us a fixed price for that too. For our better grade milk we get an extra 4*d.* a gallon above the standard price—but I mustn't stop talking for we are going to market this morning about ten o'clock. My husband said you were to come too."

When they reached the market, Jeff wandered round the pens of cattle and pigs. Mr. Homer went off to call on the miller, and when he came back he said he'd arranged for the miller's lorries to pick up the wheat that he had ready. Jeff was surprised at the number of people that Mr. Homer talked to. Some were obviously farmers like himself, some were in overalls, and others looked like prosperous business men from town. Jeff wondered who they could all be and what their business was at the market. He determined to ask Mr. Homer all about it on his way home, but in the meantime he thought he would go and watch the auctioneer at work. "Lot 42," he was calling. "A fine litter of Large White pigs—ten weeks old and all healthy. What am I bid, gentlemen?" Bidding started at £10 and soon rose to £20. The auctioneer evidently thought they were worth more for he said: "Come on—they'll be worth that each when they've been fed on those barley rakings and turned into bacon."

Bidding started again and finally Mr. Homer bought them for £29.

At lunch they met Mr. Lacey who was the leading agricultural engineer of the district. In his workshops were repaired half the broken machines of the neighbourhood and no farmer with a damaged implement, anxious to get on while the weather was right, ever telephoned Mr. Lacey in vain. He was local agent for important manufacturers of agricultural tools and implements, and most of the farmers bought all their hardware requirements from him. After lunch they went to Mr. Lacey's works to look at a new tractor-trailer that Mr. Homer was interested in, for his old one was nearly worn out.

About four o'clock they picked up Mrs. Homer and headed for home. On the way Jeff remembered to ask Mr. Homer about his many acquaintances at the market. "Many of them were farmers. The animals you saw sold were nearly all bought by other farmers or smallholders or dealers. Those ready for killing would be taken away in lorries to the town slaughter-houses. The dealers would take what they bought to other markets and try to sell them for a higher price. They might feed them up for a few weeks first but they would not keep them long. Some of the men I talked with were salesmen from firms that sell such things as oil and manures and some were officials of the County Agricultural Committee. The Mayor of the town—he owns the big brewery we passed on our way in—was there and so were several estate agents and quite a number of workers from the farms round about who had brought in lorry loads of animals. The local carriers were waiting about hoping to get loads to deliver. All these people have a part to play in farming. A visit to market is not just a holiday as some people think.

"Of course Mrs. Homer and the other farmers' wives enjoyed a gossip, but they did their shopping too. A good many of the young fellows were using their eyes and ears to learn what they could about buying and selling."

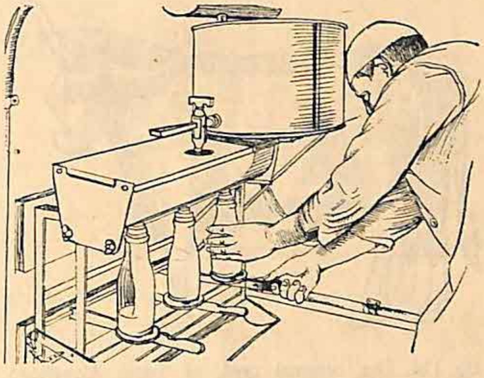


Fig. 123. A filling machine for milk bottling.

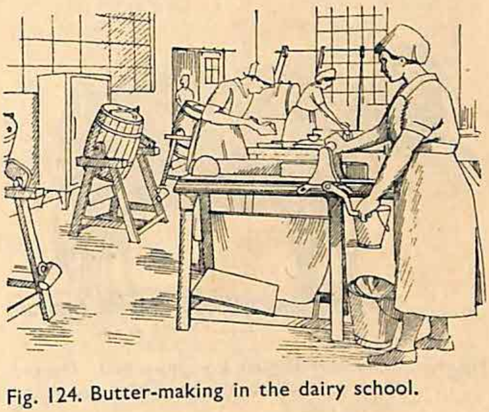


Fig. 124. Butter-making in the dairy school.

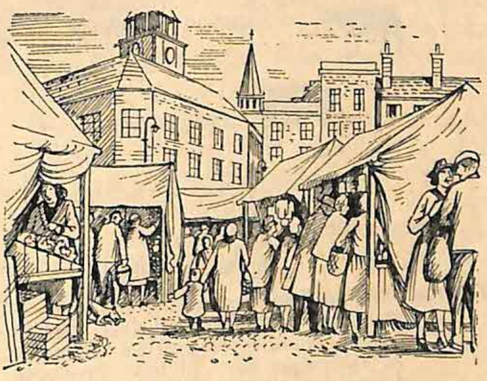


Fig. 125. Market day in the town square.

# IMPROVING THE STOCK

"MISTER 'OMER, Mister 'omer," cried the cowman's nine-year-old son one dinner time just as they had sat down to dinner. The lad was breathless and had evidently been running. "Old Sally's got stuck in the ditch down the lane and 'er can't get out. My dad says 'er's been there quite a time." Jeff and the farmer put some spades, ropes, sacks and a plank or two into the van and went at once to the scene of the accident. The cow had broken through a weak spot in the hedge, fallen into the ditch and could not get out. They dug away the bank in the right places and put some of the planks and sacks where she could get her feet on them. Then with one pulling on her head and another tweaking her tail and pushing from behind she soon struggled out to the firm ground.

As they went back Jeff said he thought Sally could have got herself out if she had tried harder, and would have had to if she had been a wild animal. "Maybe, but our cows are not wild animals. They have been bred to suit our needs, to give plenty of milk and lots of good beef. It's not so very long though since farm animals looked more like wild animals and the cows gave little milk, just enough for rearing a calf and no more. There used to be little meat on the cattle and sheep, pigs

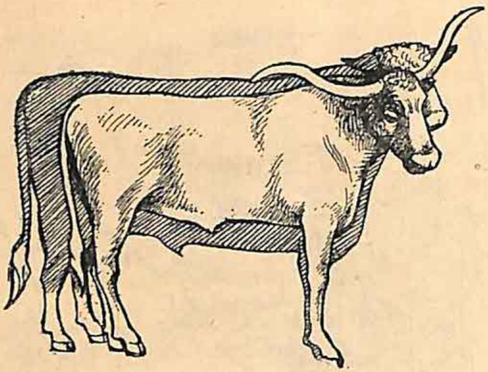


Fig. 126. The original type of Texas Longhorn placed side by side with the new type developed on American ranches. In what ways is the new an improvement on the old?

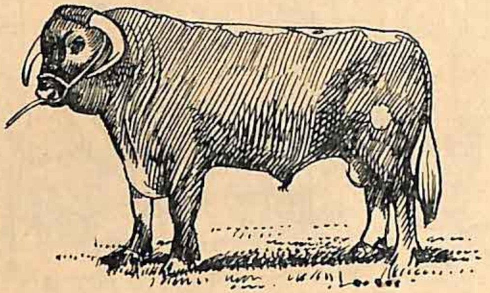


Fig. 127. A modern English Longhorn bull. The old type was rather like the Texas Longhorn in Fig. 126.

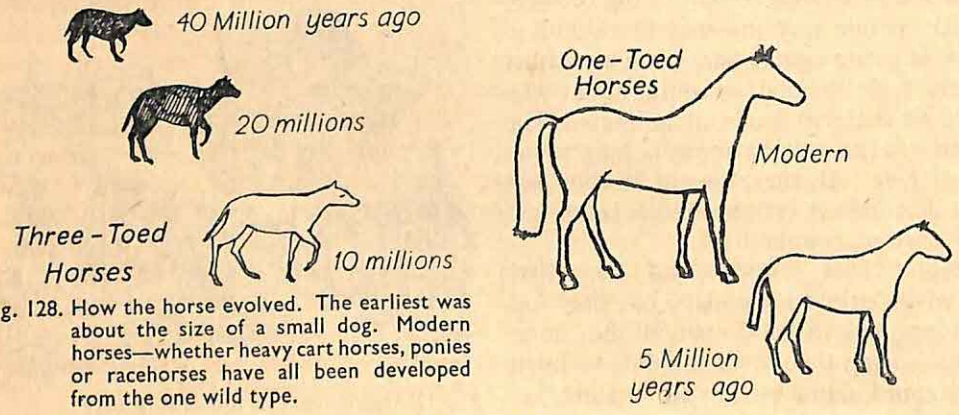


Fig. 128. How the horse evolved. The earliest was about the size of a small dog. Modern horses—whether heavy cart horses, ponies or racehorses have all been developed from the one wild type.

were fierce and their flesh tough, and hens laid very few eggs and those only in the spring in time for hatching. Then about two hundred years ago farmers began to experiment in breeding to get the kind of animals they wanted. They had long known that if you bred from healthy strong beasts you would probably get similar calves or lambs. I expect you have heard people talk of 'the survival of the fittest'. It simply means that all the weak and sick and old animals were killed or turned out by the herd and left to die.

"In this way cattle and sheep developed that were suited to the climate and conditions, such as hills or swamps, to be found in any place. Because we have many different conditions in this country we have many different breeds of livestock." "Like Ayrshire or Devon cattle and mountain or Romney Marsh sheep?" asked Jeff. "Quite right. But that is only part of the story, for animals of the same breed are not alike in all ways. It was noticed that one cow gave more milk than others or that some pigs and lambs fattened more quickly than the rest. If such animals were selected and then mated, good points could be kept and often bad points could be got rid of. This is how we have managed to get a heavy milking strain of Shorthorn cows like my Dairy Shorthorns here. The Shorthorn was originally a beef animal."

"But your sheep are crossbreds, aren't they?" "Yes, the first cross between two breeds often gives an animal that is very vigorous and one that grows quickly even if it does not get the very best food. You will notice that I do not use a crossbred ram in my flock. If I did my lambs would be a very mixed lot, some good and some bad. It is a mistake that some farmers make to breed with a crossbred bull or ram. The animal may look very good but its offspring very rarely are. That's why many of the cattle offered for sale at the market were so poor."

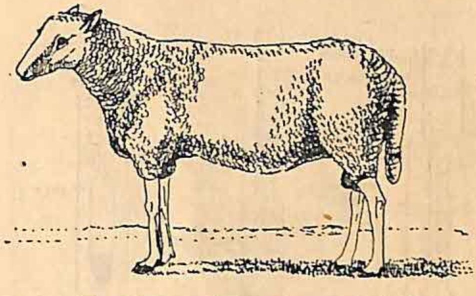


Fig. 129. The Cheviot sheep as it was in 1790.

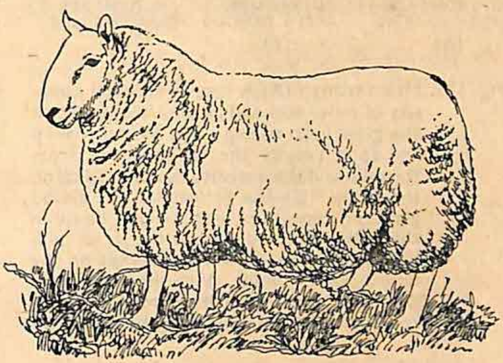


Fig. 130. The Cheviot sheep as it is today.

"I have read that many of our pedigree bulls have been exported to South America," said Jeff. "Yes, and to North America and to all parts of the world. The sheep of New Zealand have been bred from British stock and the white-faced Hereford has replaced the earlier breeds of the North American prairies. Pedigree males from our breeders are known to be the best in the world.

"The crops we grow have been improved in the same way. The seeds from the strongest plants giving most fruit or grain or leaf have been chosen for planting the next season. The wheat we grow has bigger heads and heavier grain than our grandfathers ever saw. In the same way all the cabbage family—cabbages and brussels sprouts, cauliflowers and kale—have been bred from the same wild plant."

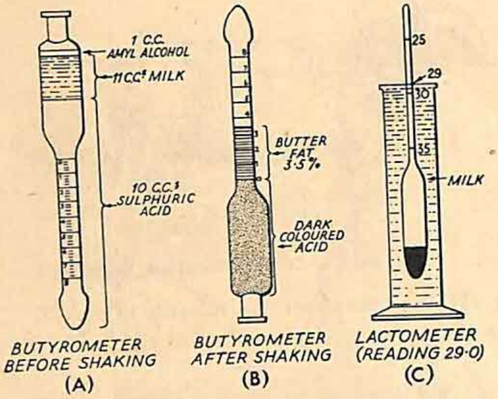


Fig. 131. Milk testing. (A) A measured small quantity of milk, acid and alcohol are placed in the glass *butyrometer*. (B) When shaken and spun rapidly the fat separates from the milk and the quantity can be read off on the scale. (C) The *lactometer* is a closed glass tube weighted with a heavy liquid in the bulb. When placed in the jar of milk it sinks to a depth which depends on the density of the milk. With these two simple instruments the dairy farmer can check the quality of the milk given by each cow.

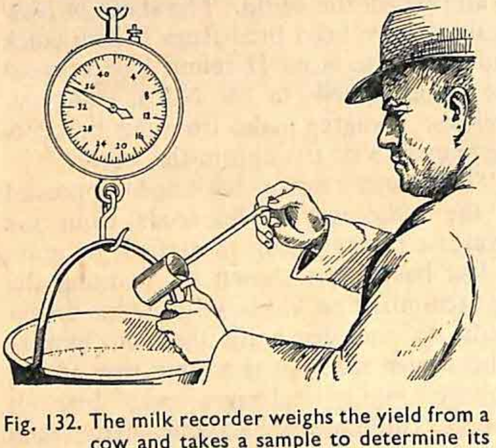


Fig. 132. The milk recorder weighs the yield from a cow and takes a sample to determine its purity and richness.

# SCIENCE ON THE FARM

AFTER Jeff had been working for Mr. Homer for a few months he received a letter from the Farm Institute. With it was a booklet which told him what subjects he would have to study there. One page told him what he should do beforehand to get ready for these studies. He took the booklet to Newstede and had a long talk with Mr. Homer about it.

"They seem to expect me to learn a lot of science," said Jeff. "I can understand a farmer needing to know about plants and animals, but why all this chemistry and biology and suchlike?" "Well, I can think of two reasons," replied the farmer. "It's what the scientists have found out that has changed farming from what it was when I was a lad. They have taught us most of what we know about breeding better stock and better crops.

"Then we have to try out in practice, of course, what they discover. We can't really do that if we do not understand their work. There are still lots of things to find out about farming, and we'll find them out more quickly if we work together.

"Get your pencil and paper and let's make a list of some of the ways we can think of where we've had help from the scientists. We'll try the biologists first and you can put down breeding at once because we talked about that the other day. They've helped us when the animals were sick, for the vet. is really a biologist, and they have shown us how to get good clean milk. When crops, too, do badly it is often because they are sick or attacked by insects. They have studied those too and have taught us a lot not only about curing disease and getting rid of pests but also about ways of keeping both animals and crops healthy.

"The chemists have helped them in finding what is wrong and how to put it right. They have found what different soils need and where and how to get the right fertilisers for them. That's only a few things for your list. See how many more you can add to it."

**1** A field of wheat gives a poor crop. Make a list of all the possible reasons for this. Are there any which the farmer cannot put right? For each of the others say what he might do to get better results when he next sows wheat in that field.

**2** Fruit trees are sprayed in winter, wheat and grass leys when they are growing, and potato crops when they are in full leaf and again when they are ready for lifting. Find out why this is done in each case.

**3** Foot and mouth disease sometimes affects cattle. Cattle suffering from this disease are killed and their carcases burned. People passing from the farm to public roads dip their shoes in disinfectant. Animals on farms for 15 miles around are not allowed to be moved to markets or to farms outside the area. Why are these precautions taken?

**4** What is meant by a *balanced ration*? Why are the concentrates or ground-up foods given to cattle in addition to the pasture grasses (*a*) carefully prepared mixtures, (*b*) weighed out for each beast?

Can you suggest why both the mixture and the weights for cattle being fattened are different from those for dairy cattle?

**5** You may sometimes see lime spread on fields. Mixed with water, lime is often sprayed or brushed on the walls of cowsheds or painted on the trunks of fruit trees. In each case explain why this is done.

**6** What are *weeds*? Name some of the commoner weeds found in (*a*) cornfields, (*b*) gardens. How and why do the farmer and gardener try to get rid of them? "Selective" weedkillers are sometimes used. Why are they given this name?

**7** Do you think Jeff Prior was wise in choosing to train to be a farmer? What are your arguments, for and against?

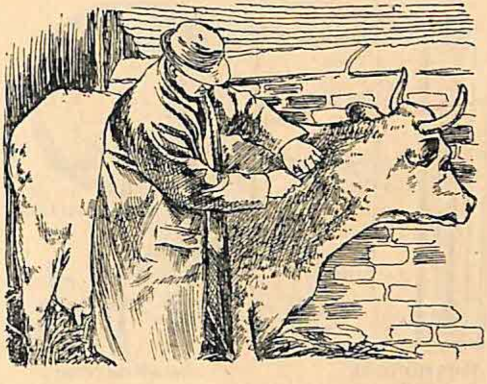


Fig. 133. The veterinary surgeon gives a cow an injection to protect it against some disease.

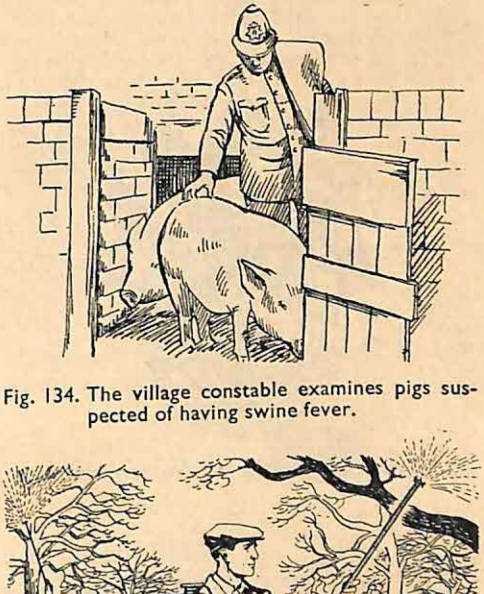


Fig. 134. The village constable examines pigs suspected of having swine fever.

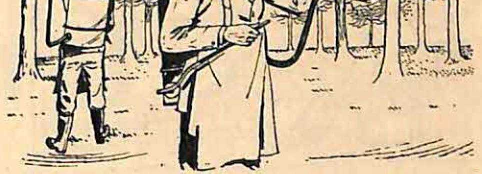


Fig. 135. Spraying orchard trees to destroy eggs of harmful insects.

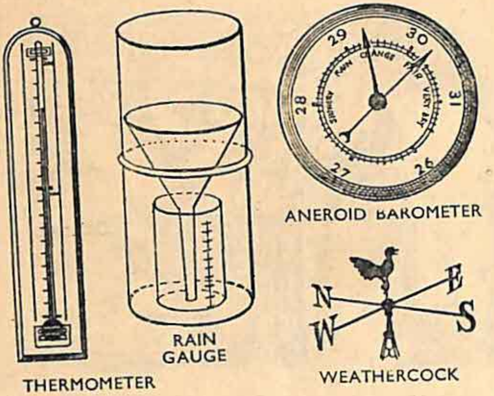


Fig. 136. Weather instruments. What does each show? Why should the farmer watch each of them?

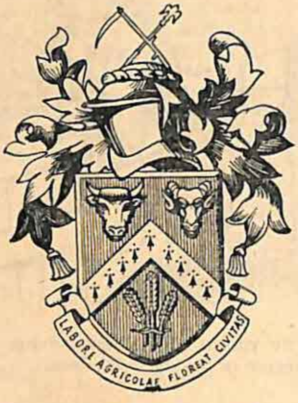


Fig. 137. The badge of the National Farmers' Union.

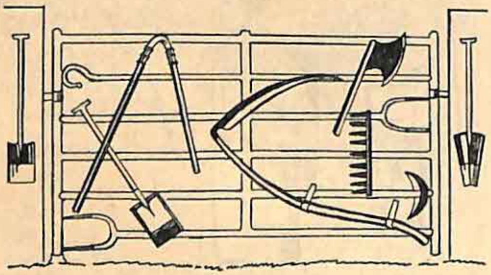


Fig. 138. An interesting iron gate.

**1** Why is the farmer more continuously interested in the weather than most people?

John Ruskin wrote: "There is no such thing as bad weather, there are only different kinds of weather." Dean Swift, who wrote *Gulliver's Travels*, said: "I never remember any weather that was not too hot or too cold, or too wet or too dry; but at the end of the year 'tis all well." What do you think a farmer would have to say to these two gentlemen?

**2** Make a collection of sayings about weather. Keep your own records and try to check if these sayings are true.

**3** A former English Prime Minister, Sir Robert Peel, wrote this verse for his young son:

*A labourer lives in yonder cot*
*With wife and children five,*
*And six and sixpence weekly got*
*Keeps the whole seven alive.*

Find out (*a*) when Peel lived, (*b*) the wage of a farm labourer today.

**4** Between 1938 and 1949 about 50,000 acres a year were lost to farming. Write down all the ways of which you can think in which our farm land is being used up.

It has been said that we may be in danger of "building towns to starve in". What is meant by this?

**5** Some lines of an old Dorsetshire song go thus:

*For the fly, the fly, the fly be on the turmit,*
*And it's all me eye for me to try*
*To keep fly off the turmit.*

The "fly" is a small beetle which attacks young plants. It may cause a farmer to sow kale seed three times over to get a crop. The farmer does try, often successfully, to "keep fly off the turmit". How?

**6** Fig. 141 shows where we obtained our butter and cheese in 1948. About $2\frac{1}{2}$ to 3 gallons of milk are used in making 1 lb. of butter and 1 gallon of milk in making 1 lb. of cheese.

Why do hill farmers away from big towns and railways tend to turn their milk into butter and cheese?

How is it that New Zealand can send us so much of these things?

Why has the home production of each dropped in recent years?

**7** Dairy cows are usually milked for 305 days after the birth of each calf. This is called the lactation period. Good dairy herds of Friesian cattle average about 9000 lb., Jerseys about 7000 lb. per period. How many *gallons* is that per day in each case?

The average dairy herd contains 15 cows. How much milk could the dairyman undertake to supply regularly? Remember what Fig. 25 shows about varying yield, that it is less in winter than in summer and that with their first calves cows give about one-seventh less than with later ones.

**8** Make a list of the crops grown on Newstede Farm. Which of these did Mr. Homer sell, i.e. *cash crops*? Which did he feed to his stock, i.e. *fodder crops*? Would you call sugar-beet a cash crop or a fodder crop?

**9** Cattle and sheep are reared in large numbers in the hilly lands of western and northern England and then sold to the lowland farmers of the eastern counties for fattening. What are the reasons for this?

**10** In the spring and summer months fast goods trains run through the night from Cornwall and from Bedfordshire to London, Birmingham and northern and Scottish cities. What do they carry?

**11** Soils consist partly of mineral matter from the underlying rocks, and partly of vegetable matter from decaying leaves and roots. What are the main differences between:

(*a*) the soil in a beech or oak wood and that in a pine wood;
(*b*) clayey soils and sandy soils;
(*c*) soils in a chalk area and those in a slate area;
(*d*) soils on a heath and those in a bog or fen?

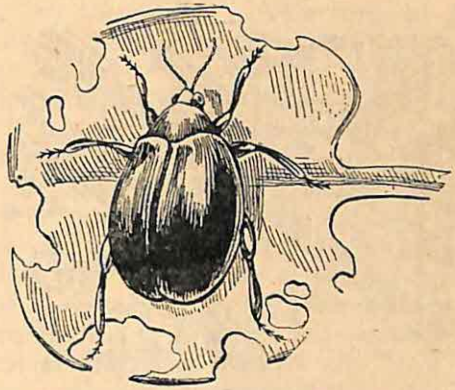


Fig. 139. A turnip beetle on a seedling leaf.

Fig. 140. Building a dry stone wall.

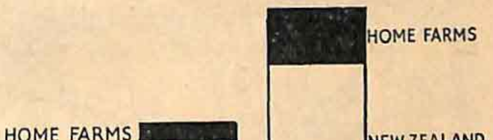


Fig. 141. Where we got our butter and cheese in 1948.

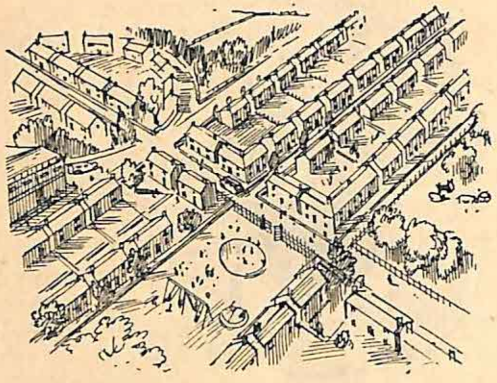


Fig. 142. New housing estates.

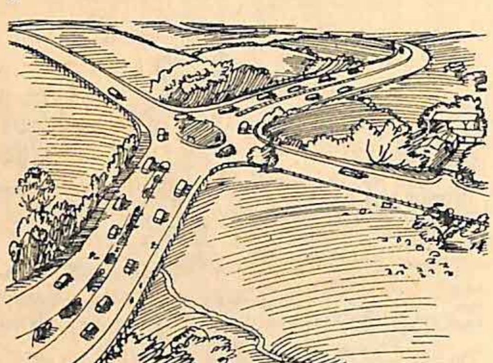


Fig. 143. Wide motor roads.

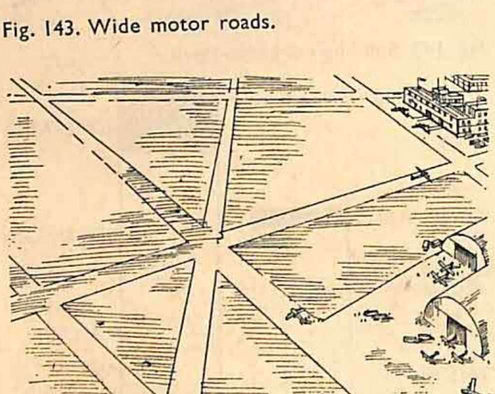


Fig. 144. Aerodrome.

HOW OUR FARMING LAND IS BEING REDUCED

## FARMING IN OTHER LANDS

GEORGE had made up his mind to go to New Zealand and try farming there and had told Mr. Homer he was leaving. When they had finished tea that day Jeff said to the farmer: "Won't George have to start learning farming all over again in a new country?"

"No, not altogether," replied Mr. Homer. "Wherever he works the farmer still depends on the soil and the weather. The crops he grows and the animals he rears may be different, but he will still have to plough and manure, sow and reap, feed his young stock and try to sell his produce when prices are highest. George won't find the work in New Zealand very different from what it is here."

"But the farms are bigger, aren't they?" asked Jeff.

"Generally they are in these new countries because the land is cheaper than in England," was the reply. "One result is that the farmer usually keeps either to raising animals or growing crops and often to only one crop or one kind of animal. George may find himself on a farm that raises sheep or keeps dairy cattle for butter-making. If he had gone to Canada he might have got to a district where nearly all the farmers were wheat farmers. You'll remember when we talked about crops I told you that the wheat I grew was a *cash crop*. I sold the grain to the miller, just as I sold the sugar-beet roots to the factory. But the kale and the mangolds I kept here to feed the stock. They were *fodder crops*, not cash crops. I grew them because they gave more food to the acre than grass and were useful as winter food. The overseas farmer works on simpler lines. His stock often feeds on nothing but grass. His cattle or sheep are sold off the farm just like my wheat. The wheat or maize farmer or the sugar-cane grower in hotter lands doesn't bother to raise animals. He sells his crop and buys his meat.

"What George will miss most, I expect, will be the market town. Canadian and Australian farmers usually send away their produce by rail to the ports and big towns. You've seen New Zealand lamb and butter in the town shops and I dare say the suit you are wearing was made in Yorkshire from Australian wool. The bread and cake we had for tea were pretty sure to have had some Australian or Canadian flour in them. There's another difference you see. They don't bargain in the market. They send their stuff to the port depots and are paid a standard price for it, just as my milk is paid for by the Milk Marketing Board."

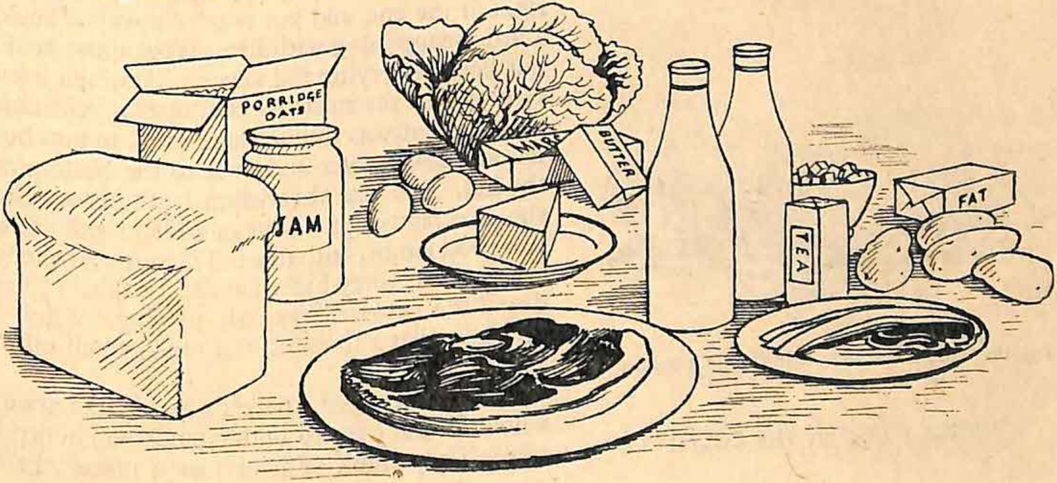
"That reminds me," interrupted Jeff, "they can't send us milk, I'm sure, from Australia. It wouldn't keep."

"Fresh milk is about the only thing that we can't buy from distant lands though," explained Mr. Homer. "Have you ever thought how meat and fruit and butter and cheese can be kept fit to eat whilst they are carried half round the world? And often when they reach England they are stored for months before we eat them. We owe that to the men who invented the refrigerator, and showed how food could be kept cold enough to prevent its spoiling. There are other ways of preserving food too. You've had tinned meats and fruit I'm sure and salted foods like bacon.

"The big differences in farming," he went on, "are mainly due to differences in the weather. Some crops can't stand frost and some need a very hot sun to ripen them properly. Long spells of drought are a curse to all farmers and are common in some countries. In Australia, water can be got from deep wells in some areas and is used to keep stock alive until rain comes again. That kind of water won't do for crops though, as it is often salty. Cultivators have many ways of overcoming dryness in the soil. Some store up water during the rainy season in dams or reservoirs. Others can draw it from local rivers, especially if these rise in high mountains where snow melts or where rain falls even during the dry season.

"One great trouble in lands with long spells of drought is that the top soil dries and turns dusty. Then the winds blow it away and leave the farmer with nothing better than desert sand. The cultivator can't help having bare soil when his crop is just beginning to grow. He can stop it from being blown or washed away if he plants crops in strips so that some are fully grown while others are just sprouting. There are some advantages you see, Jeff, in living in a rainy country like Britain."

Fig. 145. How much of our food ration does the English farmer supply?



# THE TOWNSMAN IN THE COUNTRY

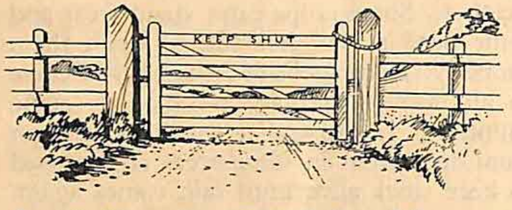


Fig. 146. *Always* close gates behind you if they were shut when you came to them.

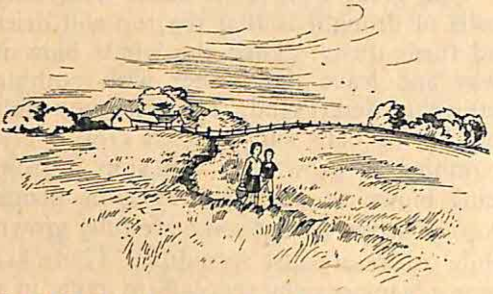


Fig. 147. *Always* keep to the path across a field.

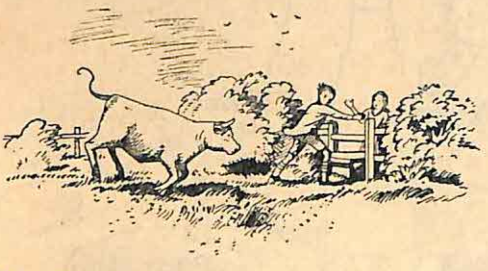


Fig. 148. *Always* see what is in the field before you enter it.

All too soon for Jeff his year passed and he came to his last Saturday on the farm. As many times before, Mr. Homer proposed to walk up Back Lane to look at the sheep. About halfway there they came across several of the cows out in the road. "Somebody's left the gate open—townsfolk, I'll be bound." They drove the cows back along the road into the field.

"There's some smoke coming from over by the haystack," said Jeff. They ran across the pasture and into the next field. A small heap of dry rubbish near the stack was burning. They quickly scattered it and stamped it out. They hadn't gone far before they caught up with a couple of young fellows, obviously from the town. One of them was smoking a pipe. "Hi!" shouted Mr. Homer, "just come and see what you nearly did with that last match you threw away." When they had shown him how much damage he might have caused he said he was sorry and promised to be more careful in future.

They told the shepherd about this incident and he said, "There's far too many like that—just don't think. I remember a couple of years back a lady drove up this lane in a car, stopped right at the end and got out for a walk. She'd a little snappy dog with her. What must he do but begin worrying the sheep. Took not a bit of notice of his mistress calling him off. One old ewe that was due to lamb tried to run but fell and rolled over and over to the bottom of the hill. She was alive when I got her up but she died lambing an hour or so later and she'd two good lambs, both dead. Of course, the lady said she was sorry but what did I expect of her dear little pet—he was only playing. When I told her what I thought, she took herself off in a hurry."

"So you see, Jeff, there's a lot of folk about who still don't try to understand the countryside. They think of it as just a place where there is grass and trees, and where they can have picnics and fresh air and let their dogs have a bit of exercise. But the country is the farmer's workshop as well as the farmer's home. Most of the people we're talking about would be very annoyed if we walked into their homes and their workshops and behaved as if they were ours. Mind you, they are decent enough folk really, but they just haven't stopped to think. They welcome their friends to their places, and we welcome all who come as friends out into the country."

At last it was time for Jeff to go. "I'd like to thank you for all the help you've given me," he said. "Well—good-bye Jeff and the best of luck." "Thank you, Mr. Homer, good-bye."

**1** Why are country folk more scattered on the land than townspeople? In some farming districts most of the people live in villages, but in others they live in cottages amongst the fields; it depends on the kind of farming. How does this affect it?

**2** In hilly districts in England there are many trees in the valleys but none on the high moorlands. The line above which there are no trees is called the *tree-line*. In high mountains such as the Alps there is also a *snow-line*. Where does it come? Which is higher: the tree-line or the snow-line?

**3** In June 1951 the number of cattle slaughtered each week in Great Britain was 15,500, in August 59,000. In October 1950, 258,000 sheep and lambs were killed weekly, in March 1951 only 62,700. Why do the numbers vary so much? The number of pigs killed changes much less. Why?

**4** The population of Great Britain is about 50 millions. How many tons of meat would be needed to give a weekly ration of 1 lb. per head?

Imports of fresh, chilled and frozen meat into Great Britain in 1951 averaged 40,000 tons per month. How much home-killed meat would have to be added to make up a 1-lb. ration?

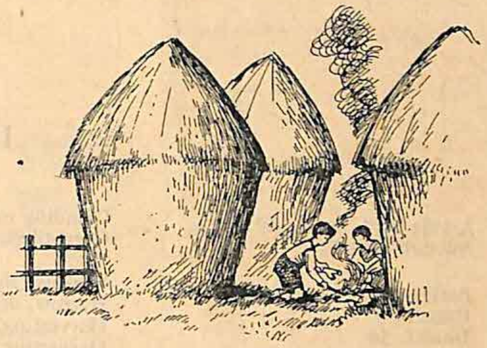


Fig. 149. *Never* make fires near ricks or stacks.

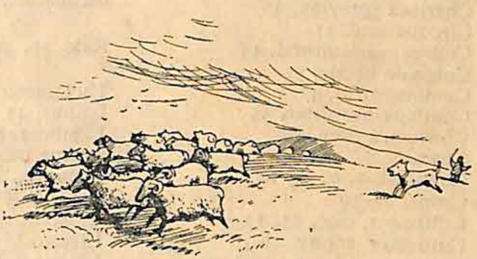


Fig. 150. *Never* allow your dog to chase sheep or cattle.

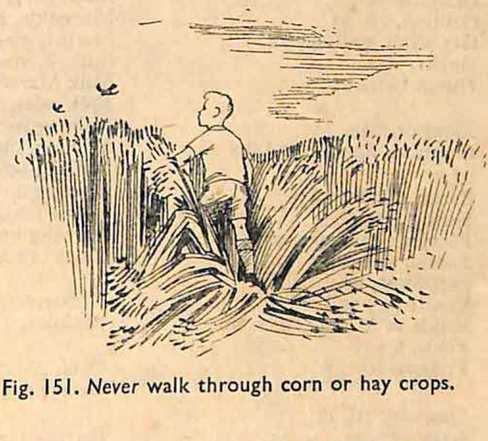


Fig. 151. *Never* walk through corn or hay crops.

THINGS *NOT* TO DO IN THE COUNTRY

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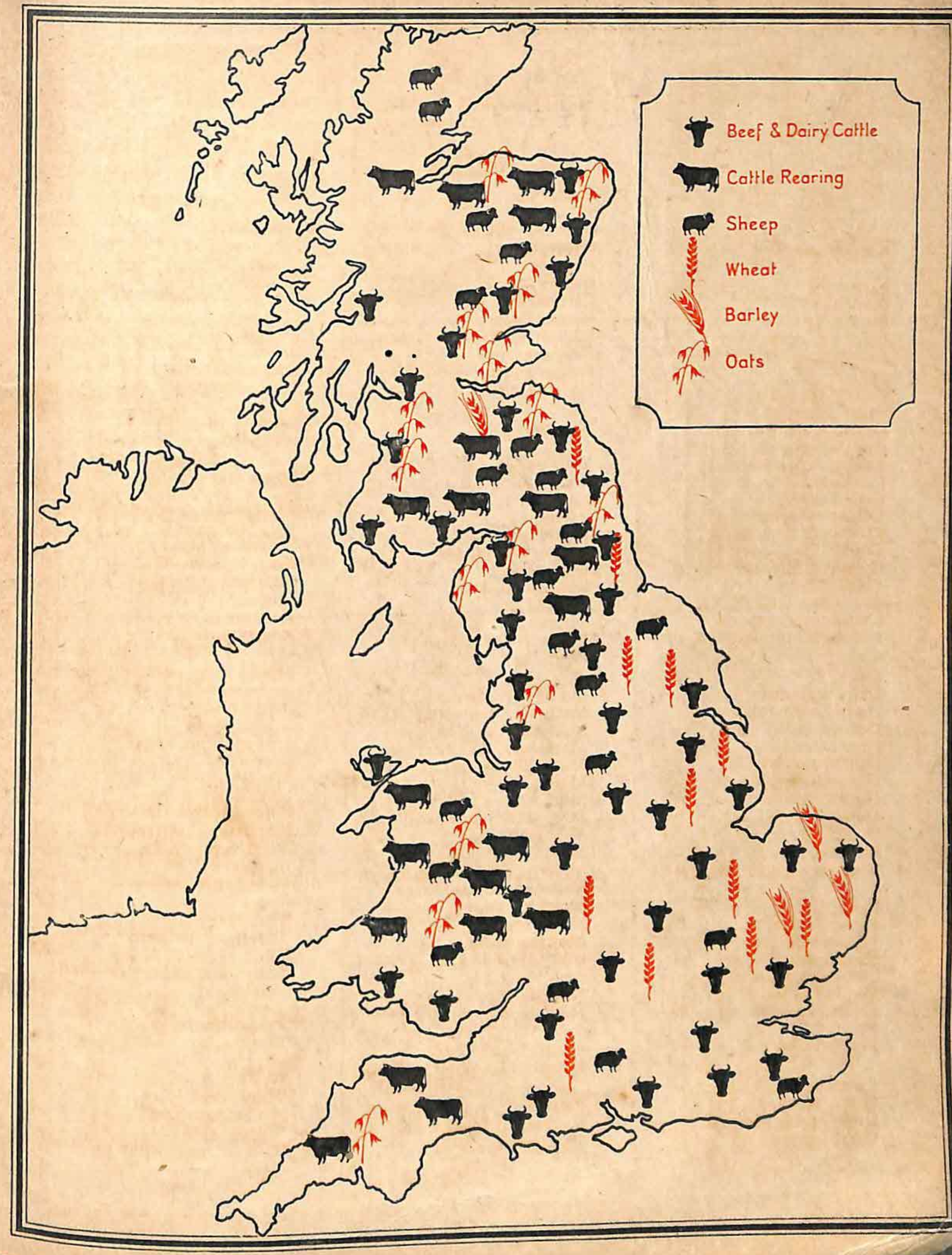
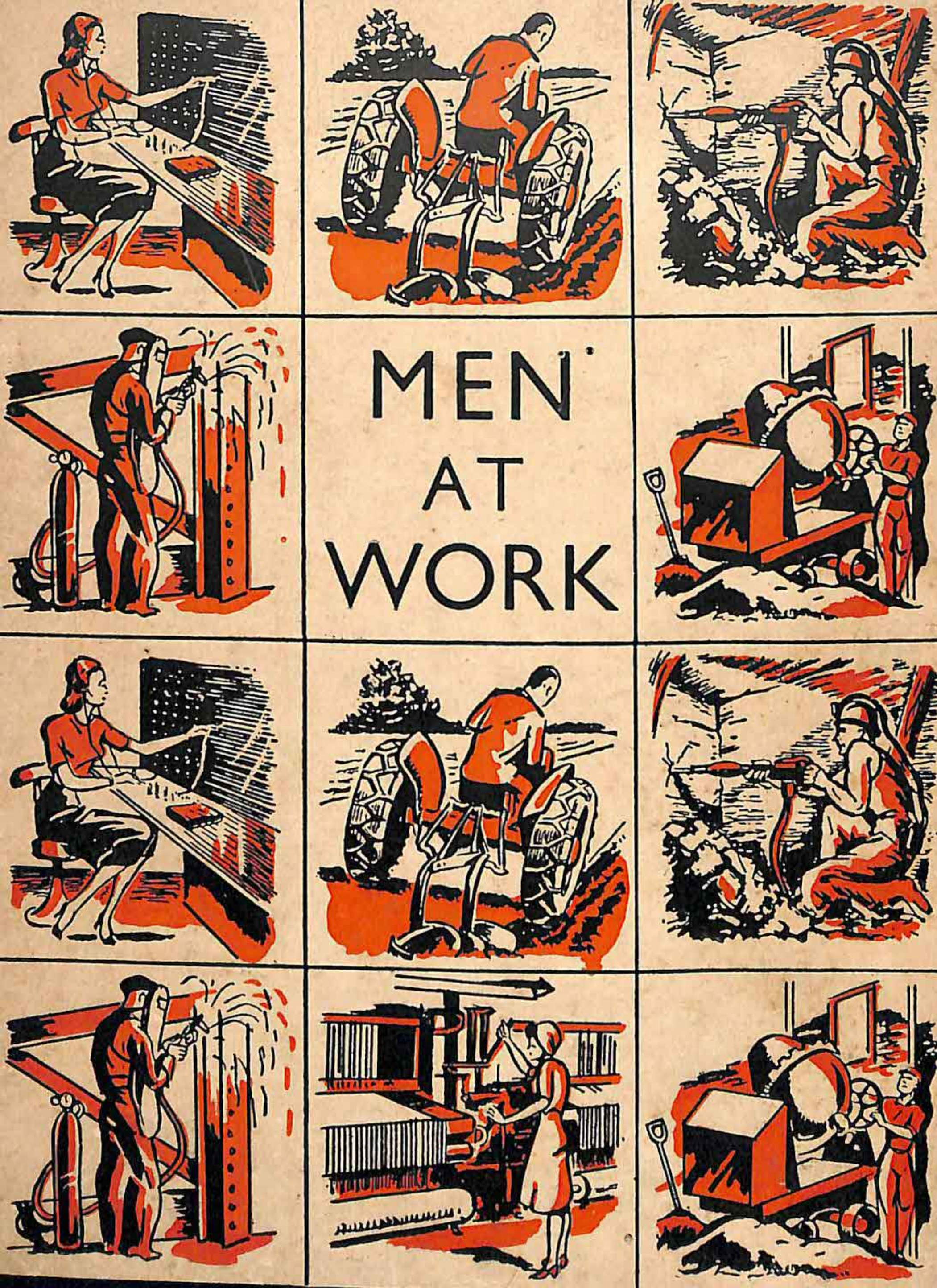

Beef & Dairy Cattle
Cattle Rearing
Sheep
Wheat
Barley
Oats



# MEN AT WORK